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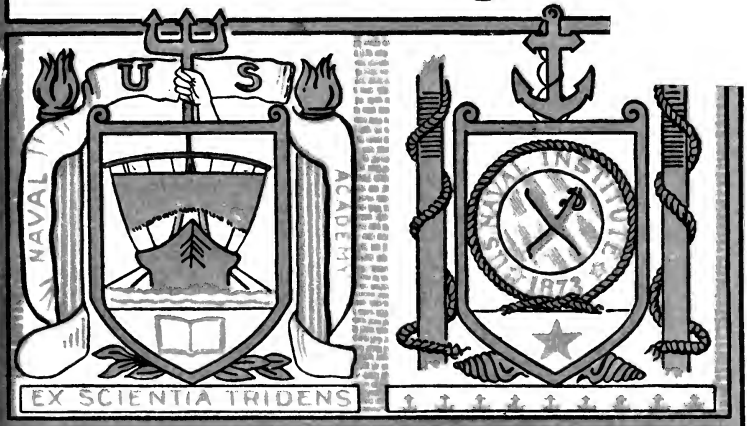

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United States Naval Institute Magazine (Proceedings) ; This is a group of 27 issues of the monthly. Each about 150 pages. Illustrated with photos///Good because they all have spine tears many but none this early 1922 is 10.00

UNITED STATES NAVAL INSTITUTE PROCEEDINGS FEBRUARY 1917 FEBRUARY 1917, Vol 43 Condition is good only because spine of this paper issue is frayed and cut. Otherwise: front cover has small cut and is dog eared. All pages are intact including PULL OUT MAP of Oct. 1916 of "THE WAR COLLEGE GROUNDS' . Illustrated with photos. 426 pp plus 10 pages of ads. ALSO Notice of Essay Contest. [H-1]

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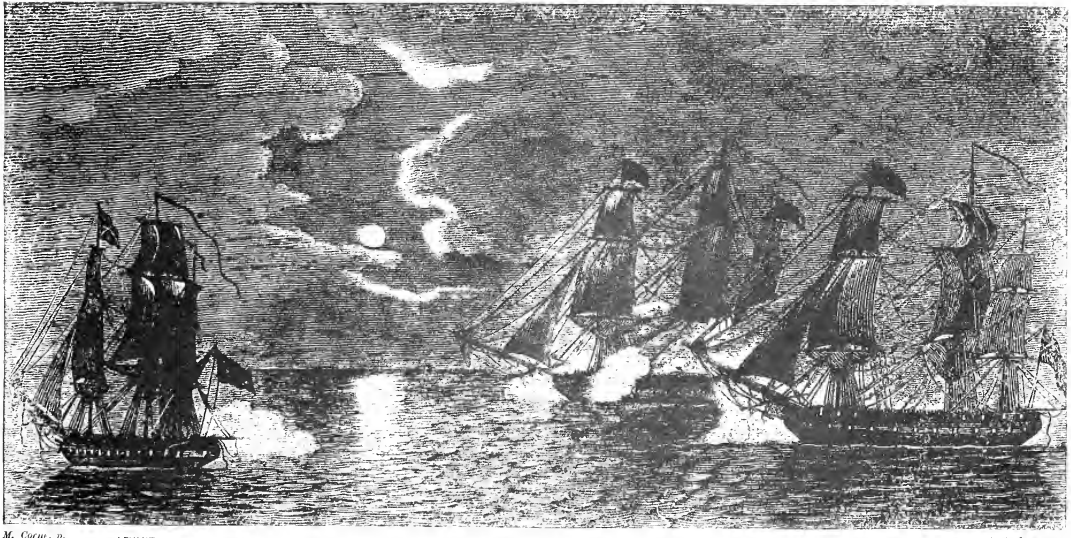

THE CONSTITUTION TAKING THE CYANE AND LEVANT

UNITED STATES
NAVAL INSTITUTE
PROCEEDINGS

Vol. 43, No. 2 FEBRUARY, 1917 Whole No. 168

THE LOG OF THE *CONSTITUTION*, FEB. 21-24, 1815

THE CAPTURE OF THE *CYANE* AND THE *LEVANT*

By NAVAL CONSTRUCTOR C. W. FISHER, U. S. Navy

Enclosed herewith is a blueprint of an extract from the log of the U. S. frigate *Constitution,* dated February 21 to February 24, 1815. This brief extract includes a description of the action between the *Constitution* and the British vessels *Cyane* and *Levant.* As an example of most admirable seamanship, excellent control, fine tactics, and a happy as well as forceful style of recording important events, I consider this brief extract to be of sufficient value to warrant its being published for the "information and guidance" of the navy to-day. It would be hard to find a better model than this modest record of a most unusual and courageous action.[1]

[1] Extract from letter transmitting the copies of the *Constitution's* log sheets.

Remarks &c on board U. S. Frigate Constitution Charles Stewart Esq. Commander on a cruize

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1	5	4	N. W. by W.		
2	5	4			
3	5	5			
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7	Lying to		Off N. E.		
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7	5	6			
8	6	4			
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12	2	4			

Wednesday February 22d 1815

Moderate breezes and pleasant weather All hands employed repairing sails, rigging &c & received on board some of the Prisoners and their baggage. Carpenters employed fishing the Spars of the Cyane and Levant

Captain Falcon complained of losing a small box containing English bank notes &c said to have been put into the boat by his Steward Made every enquiry and search for it, but could not discover where it was, examined the Officer of the boat who saw nothing of it, also the Coxswain who had not seen it passed into the boat, as it was not given in charge of the Officer of the boat by Capt. F's Steward could not feel any accountability for it

Lieutenant Ballards was put in command of the Levant

Mustered all hands &c and made search for articles said to be lost by the Prisoners

Course	Distance	Departure	diff. Lat	Lat by D. R.	Lat by Obs.d	Long in	Long by Chronom.r	Long by observation	Variation	Wounded	Killed	Sick	Dd
N. 88½° W.	170	170	6m 5 N	33° 49 N.	33° 49 N.	18° 4 W.			14 points			1	

Remarks &c on board U. S. Frigate Constitution Charles Stewart Esq Commander on a Cruise

M	H	T	Courses	Winds	Lee way
				Thursday February 23d 1815	
1				S. S. E	
2	lying	too			
3					
4	4	—	West		
5					
6	5				
7	lying	too			
8					
9	4	—	West		
10	2				
11	1	4			
12	1				
1	1				
2	2				
3	1	4			
4	2				
5	3				
6	3				
7					
8	lying	too			
9					
10	2	—	West		
11	4				
12	2	4			

Moderate breezes and pleasant weather. Under easy sail, Lieing too occasionally to receive baggage &c from the prize.

At 8. A. M. sent a gang of hands on board the Levant to take out her mizen mast, received it on board at 9, cut it off at the hounds, scarfed and hooped it, and fitted the truepel trees

Course	Distance	Departure	diff Lat	Lat by card	Lat by obs	Long in	Long by Cronometer	Long by observation	Variation	Wounded	Killed	Sick	Died
S 75° W	43′	41′	1° 11′ S	33° 38′ N	33° 38′ N	13° 56′ W			17½ points				

Remarks &c on board U. S. Frigate Constitution Charles Stewart Esq^r Commander on a Cruize

Hr	Wr	F	Courses	Winds	Leeway
			Friday, February 24th 1815		
1	2	m	West	S E	
2	1	4			
3					
4	Employed				
5					
6					
7	Calm				
8					
9					
10	1	—	W. S. W.		
11	2				
12	2	2		N. E	
1	4				
2	4				
3	3	4			
4	5	4			
5	5				
6	5				
7	5				
8	6				
9	5				
10	5				
11	5	4			
12	6	4			

At 5 P M. sent the mizen mast on board the Levant — they got it in rigged and crossed their yards and made sail at 9 P M.

Latter part mustered all hands with their bags, examined and searched every part of the ship for articles complained by the Prisoners, to have been taken from them, found a few old coats &c as per list given in, but nothing of any consequence. — Some of the articles were given to our men by theirs. Ordered all the Prisoners baggage put into the empty bread room locked up and the key given to the first lieutenant with orders to let none go into it without an officer of the Constitution being present.

Course	Distance	Departure	diff Lat	Lat by	Lat. obsd	Long in	Long by Chronometer	Long by Observation	Variation	Wounded	Killed	Sick	Died
S. 47°. W.	70	51'	0°. 48'. S.	32 — 50 N.	32 — 50 N.	19°. 58'. W.			1 point			17	

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

SOME STRATEGICAL SKETCHES

By PROFESSOR WILLIAM HOVGAARD, Late Commander, Royal Danish Navy

At a time when the United States Navy appears to stand on the threshold of a great enlargement, and problems of the general constitution of the fleet, as well as the choice of types of vessels most suitable to the service, press for immediate solution, it may not be without interest to make a speculative study of the strategic conditions under which the navy is likely to be used in time of war. Essays on strategy are mostly of a general nature, and rarely embody the consideration of concrete cases, except as required to illustrate principles. It may perhaps by some be considered inappropriate to assume and discuss a state of war between countries actually at peace and unlikely to enter into conflict, but it is obviously impossible to form a clear idea of the problems that the navy of a given country has to solve without making definite assumptions as to the enemies with whom the country may be involved in war. All cases that are reasonably possible must be considered, and too much weight must not be attached to the political conditions existing at the moment. In these days, where kaleidoscopic changes are apt to take place in international relations, the naval defences can be safely planned only on the broad basis of past history. This is the more necessary as naval development, in order to be economic and sound, must follow a well-matured programme, extending over a number of years, during which political relations may undergo great changes.

Strategic problems based on concrete cases of warfare are indeed worked out by admiralty staffs or other similar institutions in all navies, but the result of such studies must for obvious reasons remain buried in the archives. Yet, if the general public

of a country is to judge intelligently of the requirements of the navy and the coast defences, it must be informed as to the probable course of events in wartime. Many fictitious war stories have appeared in the press and in the literature, but they are almost invariably of a popular nature, and often so exaggerated that they fail to impress serious people with the importance of the questions involved. In the present article it is attempted to give a sober although brief and sketchy presentation of the subject, which may serve as a suggestion for a more complete and detailed study.

It may be argued that the European War gives the best and most positive information on which to base a naval programme, but the strategic conditions of the European belligerents differ so much from those that would exist in a war between the United States and other countries, that the experiences of the European War cannot be applied directly. A study must first be made of the form which naval wars are likely to take when this country is involved.

The assumption as to the state of war must comprise the most typical and important of possible contingencies—not necessarily those that are most probable. They should be simple, unessential complications being avoided, but they must cover both defensive and offensive cases of warfare. On these general principles the assumed conditions are selected in the following. Other and more complex cases could be easily conceived and the courses of events might differ considerably from those here assumed, but the requirements to the navy would remain the same or would fall within those determined on the basis of the most important cases of warfare.

The pictures here drawn of the events are necessarily incomplete, since it is futile to carry the speculation beyond the first stages of the war, when numerous possibilities, largely of an accidental nature, present themselves and increase the complexity of the problem. The present study, however, in virtue of its concrete nature, brings out sharply the principal requirements of the United States Navy, and it gives indications as to the relative importance of the various types of warships as well as their general features. It also shows the urgent necessity of reinforcing the mobile defences of all outlying possessions, in particular those of the Panama Canal.

We shall assume the status of the naval and military defences of the United States and of the other supposed belligerents to be essentially as at the present time, disregarding the actually existing state of war.

1. THE UNITED STATES AT WAR WITH ENGLAND

The issue of such a war would probably be determined on shore; namely, on the North American Continent. Presumably the English main attack would take the form of an invasion across the Canadian border, and perhaps landing expeditions would be attempted at points of the East Coast. The primary duty of the British Navy would be to protect the lines of communication across the Atlantic. At the same time the British maritime trade would have to be safeguarded and that of the United States hindered or paralyzed. All these objects would be attained by clearing the sea of raiding vessels, and by an effective blockade of the American coasts; but these tasks present peculiar difficulties which it is necessary to consider in detail.

The coast-line of the United States is not only very extensive, but is divided into three distinct sections, the Atlantic, the Gulf, and the Pacific coasts, facing strategic areas, each of which would have to be kept under separate surveillance. Numerous naval stations, navy yards, and commercial harbors are found scattered along these coasts, and the problem of blockading is further complicated by the existence of insular possessions and the Panama Canal. England possesses, indeed, several advanced bases relative to these coast-lines, and two of them, Halifax and Bermuda, have an ideal location in front of the most important section of the Atlantic Coast; but other stations are less favorably situated as bases for a blockading fleet (Jamaica, Vancouver), while some are too weak or too limited in harbor facilities and resources (Nassau).

Hence, although the enormous extent of the littoral of the United States renders coast defence in a complete form practically impossible, it, on the other hand, presents the compensating advantage that an effective blockade is equally difficult to carry out. The Atlantic Coast is in this respect much more favorably situated than the German North Sea Coast in the present war. In the North Sea the British Islands, dotted with excellent harbors and provided with all the resources needed by a navy, extend as a barrier

for about five hundred miles in front of and relatively close to the German naval bases, which are penned up in a corner of this narrow sea, easy to watch and to blockade. In the war here contemplated the conditions are practically the reverse, since the blockading fleet must concentrate at one or two known points confronting a coast-line extending for about fourteen hundred miles. The blockading fleet, moreover, must depend for its continued efficiency largely on supplies from the mother country.

We assume that at or before the outbreak of the war a screen of American light cruisers and destroyers, assisted by submarines and aircraft and supported by armored cruisers in the rear, would be thrown out in front of the Atlantic Coast; but with the existing outfit of cruisers, which are limited in number and most of them of relatively slow speed, the screen would be incomplete and weak, and could not safely be advanced to any great distance from the coast. It would probably, soon after the opening of hostilities, have to withdraw before the vastly superior forces of the English screen. After that the English would presumably attempt to establish a blockade of the Atlantic and Gulf coasts, as well as of the Panama Canal, light vessels being stationed off the shore outside harbors and estuaries, while battle cruisers would patrol the sea at a greater distance from the coast and the battle fleet would remain concentrated at Bermuda and Halifax. The blockade would have a mixed character, being partly "close" but essentially "open," and the American battle fleet would have considerable freedom of action even if debarred from operating at great distances from the coast. Probably it would be perferred to maintain the fleet "in being" rather than to risk a decisive action against superior forces. In fact, a vigorous offensive defensive, based on sporadic action, would appear very promising under the circumstances. Were such a policy adopted, the American main fleet might with advantage be distributed between important naval stations on the Atlantic Coast, while independent squadrons might be detailed to the defence of the Gulf and the Pacific, since by such scattering of the forces, the difficulties of maintaining an effective blockade would be immensely increased for the English. Under these circumstances complete concentration of the main fleet might not always be possible, and would be, in general, unnecessary, since a decisive fleet action would be the one thing to avoid; but partial condensation

of the forces for the purpose of overwhelming minor portions of the enemy fleet might frequently be effected, and thus good opportunities of inflicting serious losses on the enemy might occur.

The service of the blockading light vessels would probably be exceedingly strenuous, since they would be exposed to incessant and vigorous attacks from all classes of warships of the widely scattered American fleet. Raiding vessels would have frequent opportunities of breaking the blockade, being eventually supported in this act by the battleships, and when at large they could prey upon British commerce and threaten the communication between England and Canada, but the American Navy in its present condition would not be able to make proper use of these opportunities on account of its weakness in scouting cruisers and its total lack of battle cruisers. These deficiencies, in fact, would greatly simplify the task of the enemy.

The American submarines would force the British battle fleet to operate with caution and normally to remain in port in the Bermudas and Halifax. If the United States were in possession of a number of larger sea-going submarines, which could be sent as far as the Gulf of St. Lawrence, the summer routes through Cabot Strait and the Strait of Belle Isle might be threatened.

Probably a belt near the Atlantic Coast would remain under the control of American submarines and torpedo-craft, aided by mine fields; but it seems doubtful whether the coastwise trade could be maintained. Waterways like the Cape Cod Canal would be of extreme value under these circumstances.

As stated above, the blockade would probably from the beginning of the war be extended to the ports on the Gulf Coast and in the Caribbean Sea. Guantanamo and the other American stations on the West Indian Islands, being practically without defences, would fall in the hands of the enemy, but the most important objective in this region would be the Panama Canal. Among all the detached strategic points belonging to the United States, the canal stands supreme in importance as the connecting link or bridge between the eastern and western strategic areas. The defences of both terminals of the canal against attack from the sea appear to be well provided for by coast fortifications, mines, and submarines, but against serious land attack the mobile garrison of the Canal Zone is entirely inadequate, consisting of a few infantry regiments and a company of engineers. Being with-

out connection with the United States by land and having no independent technical military resources, the canal must depend for its tenure entirely on the navy. In the war here under consideration the English, being in command of the sea, could without difficulty dispatch a strong expeditionary force to the Isthmus. Landings might be effected in the vicinity of the Canal Zone on the Caribbean side beyond the region that is under direct control of the defences. Difficulties in the terrain might delay the operations, but the fall of the position would only be a question of time, since the English could bring a practically unlimited pressure to bear on it. A British squadron in the Pacific could prevent reinforcements from reaching the Canal Zone by way of Panama. If the canal fell into the hands of the enemy in unimpaired condition, the operations of the British fleet in the Pacific would be immensely facilitated and the blockade would be at once extended to the West Coast of the United States, if this step had not already been taken. The canal would thus become a positive disadvantage and a source of danger to the United States in the same measure as it would be of strategic value to the enemy; but it seems likely that the garrison, before surrendering, would wreck the canal for the probable duration of the war. This could be accomplished, for instance, by demolishing the Gatun Dam, or by simply letting out the water of the Gatun Lake, whereby the canal would be rendered useless for one or perhaps two years. It might be found wise even to make the canal inoperative and to evacuate the zone at once on the outbreak of hostilities, a procedure that would be analogous to the destruction of important bridges and the abandonment of untenable positions in land warfare.

Whether the English were able to make use of the canal or not, it would be necessary for them ultimately to blockade the Pacific Coast of the United States in order to protect their commerce; but this blockade would be difficult to maintain, especially as long as Pearl Harbor and other stations in the Pacific were still in the hands of the Americans, since the blockading vessels would then be exposed to attack from the rear. For this reason and so as to deprive raiders of all footholds; England would have to seize or blockade all these stations, none of which, with the exception of Pearl Harbor, could offer any serious resistance. In fact, the outlying possessions would in this, as in all wars against a power superior at sea, be a source of anxiety and weakness.

We need not for our purpose pursue the study further. It is clear that the American battleships, distributed in different ports on the extensive coast-lines and employed for energetic sporadic action, would greatly complicate the task of the British Navy. It seems evident, also, that in a war against an enemy, vulnerable in his commerce and under the necessity of transporting great armies across the ocean, battle cruisers, light cruisers, and sea-going submarines would be of the highest value. Bearing in mind the concern and embarrassment, which the small German East Asiatic cruiser squadron caused to the British Admiralty in the beginning of the present war, we can imagine what the result would be in the war here contemplated, if the United States were provided with even a moderate outfit of raiding and scouting vessels of the above mentioned classes.

2. THE UNITED STATES AT WAR WITH GERMANY

We shall assume that the strength of the German fleet, after deduction of the forces required for home defence, would be somewhat superior to the American in battleships and overwhelmingly stronger in cruisers and destroyers.

Since Germany does not possess any naval stations in the Atlantic that could be used as advanced bases in operations on the coast of America, we suppose that the first preliminary objective of the German Navy would be the seizure of one or more points suitable for this purpose. The West Indies appear to offer the best and perhaps the only opportunities for the acquisition of such bases. Several excellent harbors and anchorages are found on the islands such as St. Thomas, Samana Bay in Haiti, and others, which the Germans, apart from opposition of the American fleet, could seize without encountering serious resistance.

We shall assume first that the Americans would seek a decision before the German fleet had succeeded in establishing itself at a base, and that the main battle would take place in the vicinity of the West Indian waters after the American screen were driven back in a series of minor actions. The result would depend first, on the relative qualities and efficiency of the personnel in the two fleets, which, in a theoretical study like the present, must be assumed to be equal; second, it would depend on the forces which the Germans could spare for the undertaking and on the condition of the fleet on its arrival in the West Indies, but apart from these

uncertain elements the Americans would have a decided advantage in the individual superiority of their battleships. Comparing ships of the same date, and excepting the most recent of the German ships, the data of which have not been published, the American ships are throughout of more rational design. They carry more powerful guns, the batteries are better arranged, and they possess, moreover, all the advantages that follow inherently from larger displacement.

If the American fleet were victorious, the war would come to a speedy end. If it were defeated, it would probably fall back on Guantanamo or entirely withdraw from the West Indian waters and the situation would thus be similar to that already discussed in case of a war with England.

Let us consider the case where the American fleet, instead of initially risking a decisive fleet action, followed a defensive policy and took up a position in the West Indies, while the German Fleet with its train seized a base in the Eastern Caribbean. We assume that the American fleet, so long as no defences are established on Culebra or St. Thomas, would choose Guantanamo Bay as a base, because it is singularly well situated as a flank position, whatever be the ulterior objective of the enemy. In fact, the Germans could not undertake any serious expeditions, whether against the United States, Panama, or South America, so long as the American fleet were unimpaired and free to make sorties from that station. The first task of the Germans would therefore necessarily be a close blockade of Guantanamo and attacks on the place by landing parties. At the same time the German Navy would have to prevent reinforcements from landing elsewhere on the Island of Cuba. Guantanamo, with the existing weak defences, and unless it were in time provided with a strong mobile garrison, could not make a prolonged resistance. The American fleet, in order to avoid being destroyed in port like the Russian fleet at Port Arthur, would soon be forced to come out for a decisive battle, the possibilities of which have already been discussed.

If the United States fleet were defeated and for the time being incapable of serious action, the American harbors would be blockaded and the Panama Canal attacked with the probable result that it would be rendered useless.

We shall not attempt to discuss in detail the further operations or ultimate objective of the Germans, but the sea would now be clear for the transportation of large expeditionary forces or armies across the Atlantic, whether for the purpose of securing the acquisition of new colonial possessions or for invading the United States.

Whatever the outcome of such a war, it is seen that, again, the issue would depend essentially on the battleships, while battle cruisers and fast light cruisers would be urgently needed by the United States Navy for disturbing the passage of the enemy's oversea expeditions and his communications. Battle cruisers would be useful also in fleet action, provided they are designed with this purpose in view.

3. THE UNITED STATES AT WAR WITH JAPAN

The United States Navy would in this case be decidedly superior to that of the enemy in battleships, but would lack the element of speed which the Japanese Navy possesses in a squadron of battle cruisers. The Japanese Navy would be somewhat stronger also in older armored cruisers and scouts.

Strategically, such a war would differ markedly from those so far discussed in virtue of the enormous distances that separate the main bases of the two countries. The Panama Canal would again be of the utmost strategic value to the United States, and Pearl Harbor would form an excellent base in the Pacific, but, being about 3400 miles distant from Japan, it could serve only as an intermediate station in offensive operations against that country. The Philippine Islands are in this respect more favorably situated, but are yet too remote from Japan to serve as an advanced base for a blockading fleet, Manila being about 1300 miles from the southern Japanese islands. Japan, moreover, flanks the line of communication between the Philippines and Hawaii, which line is about 5000 miles in length.

Guam Island, which is about 1700 miles nearer to Hawaii and Panama than is Manila, and which is no farther from Japan, is at present merely a coaling station, practically without any defences. Yet, this little island, of form and size as the extreme half end of the Gallipoli Peninsula, is much easier to defend than stations which, like Manila, are situated on larger islands where landings are more difficult to prevent. It has a commodious

natural harbor which with proper improvements can be rendered serviceable for a large fleet. If the United States is to maintain a strategic position in the East, a strong naval base at Guam appears to be indispensable. In the hands of Japan it would absolutely destroy the security of the line of communication with the Philippines.

As matters stand, the United States is without a base in the Pacific suitable for offensive operations against Japan, and it does not seem likely, therefore, that the American fleet at the opening of hostilities would be advanced beyond Hawaii. Possibly a minor squadron would be detached to the Philippines and we shall suppose these islands to be garrisoned as at present, with some 13,000 United States troops.

We assume further that the Japanese, eventually using the naval station Takow, on Formosa, as an advanced base, would open the war with a surprise attack on the Philippine Islands. The American squadron would be blockaded or destroyed by a superior Japanese fleet and an army would be landed. The positions at Manila and Olongapo would fall and all important strategic points on the islands would be occupied. Guam would be captured. These operations would probably be completed before succor could be rendered, and once the Japanese were firmly established, they could not be driven out of the islands till after their fleet was defeated or closely blockaded and the sea cleared of their cruisers; but this task the American fleet, as now constituted, could hardly hope to accomplish under the given disadvantageous strategic conditions.

Having thus secured control of the western part of the Pacific, Japan would presumably follow a defensive policy, the battle fleet being kept in home waters for protection of the coasts and engagements with superior forces of the enemy being avoided. The older cruisers might be detailed for protection of commerce in Asiatic waters and the fast modern cruisers, including the battle cruisers, might carry out raiding operations in the eastern part of the Pacific, threatening in particular the communications of Hawaii. Eventually, important points in Alaska would be seized.

It is difficult to see how under these circumstances the American fleet could force the Japanese to a decision against their will. Offensive operations of importance could not be undertaken in these days of submarine dangers without the possession of an

advanced base in the vicinity of the enemy's coast; but no such base is known to be available near the littoral of the Japanese islands. Even if a suitable base were secured, the weakness of the American Navy in cruisers and flotillas would render blockading operations ineffective and would jeopardize the vitality of the fleet, because it would be impossible to protect the extensive line of communications.

It is likely, therefore, that the American main fleet would remain at Hawaii, where it would be strategically in the best position for protecting the Pacific Coast and the canal, at the same time preventing the Hawaiian Islands from falling into the hands of the enemy. In fact, serious attacks by the Japanese fleet on points on the American Continent or on Hawaii would hardly be attempted, and the Japanese would probably be content to seek opportunities of overwhelming weaker divisions of the American fleet. The war would be essentially a cruiser war, in which the Japanese would have the advantage of a more modern and powerful matériel, but by using battleships as convoys the American Navy should be able to protect its lines of communication in the Eastern Pacific.

In order that the United States should be capable of carrying out an offensive war against Japan with any chance of success, it would need to possess a suitable advanced base and a fleet decidedly superior to that of the Japanese in all the various classes of warships. On account of the vastness of the Pacific Ocean, the ships of all classes must be endowed with the highest sea-going qualities and steaming capability, and since they must also possess at least the same military qualities as ships of the same class in other navies, they must be of very large size.

4. The United States at War with Germany and Japan

If Germany and Japan were acting together as allies against the United States, the balance of naval power would be strongly in their favor. Yet, their added naval strength would fall far short of that of Great Britain, and they would not, like that power, be in possession of suitable advanced bases. Their forces would be—at least initially—divided.

Let us first assume that the American fleet were concentrated in the Atlantic, leaving the Pacific Coast to depend on local defences, consisting chiefly of destroyers, submarines, mines, and

fortifications. In such a case the situation in the Atlantic would be as in a war with Germany alone, but the Panama Canal would probably fall into the hands of the Japanese, since the American fleet could not be detailed to its defence without leaving the Atlantic seaboard open to attack, and a Japanese army could be landed at the Pacific end of the canal. All the outlying possessions in the Pacific, including Alaska and the Hawaiian Islands, would be untenable with the present means of defence, and Pearl Harbor would be liable to suffer a fate similar to that of Kiao-chau in the present war.

If the United States fleet succeeded in defeating the German fleet, it would perhaps later, after a period of recuperation, be able to clear the Pacific Coast of the Japanese; but if it suffered a reverse, both seaboards would be open to attack and invasion.

Instead of seeking a decision in a great battle, a more cautious, defensive policy, as explained in case of a war with England, based on sporadic action with a scattered distribution of the fleet on both coasts might be preferred.

It is seen that the fleet of the United States, in order to derive full benefit from the favorable strategic situation existing at the beginning of such a war due to the division of the allied forces, must be capable of defeating each of the opponents singly with a good margin of strength, and the defences of the Panama Canal must be such as to render it absolutely secure against attack by sea or land.

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

LOGISTICS—ITS INFLUENCE UPON THE CONDUCT OF WAR AND ITS BEARING UPON THE FORMULATION OF WAR PLANS

By CAPTAIN H. P. HUSE, U. S. Navy

Strategy in its widest meaning includes logistics and tactics, but it is convenient to consider logistics and tactics as integral branches of the art of war, and the province of each must be understood and clearly defined before the work of the staff can be properly coordinated. To this end strategy is limited to planning and directing, while logistics provides the means and executes. Strategy, for instance, decides that we need a certain force in the Pacific and prescribes its character, disposition, and employment. Logistics provides this force, maintains it and places it, all in accordance with the demands of strategy. Tactics covers the movements and operations of the forces while in contact with the enemy.

All the activities of the navy come under one of these three heads, but *strategy* and *tactics* are so closely connected that in a discussion of *logistics* it is not necessary to differentiate between the former two. We will therefore consider only the two titles, strategy and logistics, and distribute the activities of the navy between these, leaving tactics and the line which divides it from strategy to a later paper.

Naval strategy includes the following:

(a) The number of vessels of each type required and their characteristics.
(b) Location of naval bases and repair stations and their capabilities.
(c) War plans providing for all possible contingencies.
(d) Organization of the forces.
(e) Operations and movements of forces in the execution of policy in peace and war.
(f) Operations and movements of forces for the purpose of exercise and test, as in war games.

Naval logistics includes the following, all to be performed in accordance with the requirements of strategy:

(a-1) Planning, constructing and maintaining the fleet.

(b-1) Fortifying, developing and maintaining naval bases and stations.

(c-1) Enlisting, maintaining, educating, training and drilling personnel. This includes target practice.

(d-1) Providing, storing, and delivering supplies of all kinds, including ordnance, ammunition, fuel, clothing, provisions, etc.

(e-1) Transporting personnel and matériel; care of ill and wounded.

When we began a few years ago to build up our navy, it is hardly an exaggeration to say that the question of matériel occupied the attention of the leading minds of the service almost to the exclusion of all thought of the personnel. This was only natural, for the personnel seemed to be at hand, ready to be developed when the matériel should have been supplied. But, as a result of this point of view, the matériel has developed faster than the personnel, and we are now suffering not only from the direct effects as shown in a shortage of officers and men, but indirectly in the difficulty we have found in educating the public to a realization of the fact that it requires as long to train a gunner as it does to build a gun, and much longer to develop an officer than it does to build a ship. However, both matériel and personnel are now in a fair way to receive due consideration, and the development of the personnel of the individual ship has reached a high degree of efficiency. Logistics has performed this part of the task very successfully. We may say that the following items under logistics have been fairly well taken care of:

(c-1) Enlisting, maintaining, educating, training and drilling personnel.

(d-1) Providing, storing, and delivering supplies of all kinds, including ordnance, ammunition, fuel, clothing, provisions, etc.

(e-1) Transporting personnel and matériel; care of sick and wounded.

With items (a-1) and (b-1) it is different.

Item (a-1), *planning, constructing and maintaining the fleet,* has received a great deal of attention, but the delays in planning and

building our ships, the frequent changes after construction, the unsatisfactory condition of our submarines, and the inadequacy of our aeronautical service, are clear indications that either the organization of this branch of logistics is defective or that the personnel is inefficient. Now the general opinion of the service is that the personnel involved is not inefficient, and we must therefore attribute the trouble to defective organization.

Item (b-1), *fortifying, developing and maintaining naval bases and stations,* has been the subject of much discussion in the service and out of it, but so far as the writer knows, it has never reached the stage where logistics could properly take it up. It is the business of strategy to determine the location and capabilities of naval bases and repair stations, just as it is the business of strategy to determine the number of vessels of each type and their characteristics. It is evident that in determining these questions, strategy is limited by logistics and must therefore give full weight to logistic considerations. Thus it might be desirable from strategic considerations to have a naval base at a certain place, but difficulties of construction or of fortification, or some other reason, might make the location there impossible. The same is true of ships where cost, protection, armament, speed and radius of action are conflicting qualities. Here again strategy (or tactics) determines after receiving all possible information from logistics.

I do not purpose in this paper to discuss in detail the methods now followed at the Navy Department. That these are not thoroughly successful is shown in the paragraphs preceding. My purpose is to take the department organization now in existence and without changing it materially allot the various tasks in accordance with more correct principles. It will be seen that nothing radical is necessary in order to accomplish this, but a clear understanding of certain ruling principles is essential. These may be formulated as follows:

1. The difference between strategy and logistics must be clearly understood.
2. Tasks must be allotted among subordinates so that the task of each subordinate shall be in itself homogeneous in character and logically within the scope of his capabilities.
3. Each subordinate to whom a task is allotted must be given the authority and the means necessary to perform it.
4. The responsibility for the performance of each task must be undivided and personal.

5. Superior authority having allotted a task to a subordinate must not interfere with his performance thereof. Superior authority must limit its activities to coordinating work and to such inspections as will enable it to be thoroughly cognizant of the progress and the result produced.

There is a theory of government based on the principle of "balance and check" where the liberties of the people are supposed to be protected by balancing and checking the power of one branch of the government by the power of another branch. We see this in our Congress where the Senate and House, originally intended to represent different interests, now merely serve the purpose of holding each other in check; the veto power of the Executive is another example; while the Supreme Court in declaring laws unconstitutional has frequently checked both Congress and the Executive. But, however such a system may make for "safety first" with regard to the liberties of the people, it certainly does not make for progress, and there is a tendency in our day to sacrifice "balance and check" in exchange for greater efficiency. Curtailing the power of the British House of Lords is a case in point.

We see this same system resorted to in party politics, and even sometimes in society, where one faction is played off against another by leaders who thus seek to retain control by holding the balance of power.

But what should we think of a business corporation in which any of the energies of one department should be expended in neutralizing the energies of another? The answer is simple: the competition of more ably conducted corporations would soon drive it out of business and it would cease to exist.

At the Navy Department we have an all-powerful head to whom strategy and logistics are as unfamiliar as are statesmanship and finance to a naval officer. He is appointed to the office as an exponent of the policy of the administration, and as such it is logical and correct that the expert officers directing the strategy and logistics of the navy should be under his orders and responsible to him; but it is neither logical nor correct that he should direct any details of these highly technical divisions.

The navy list shows that at the department there is a Secretary's advisory council consisting of the assistant secretary, the chief of naval operations, the chiefs of bureaus, the commandant of the marine corps, and the judge advocate general. There is also a

chief of naval operations with a corps of assistants of high rank chosen for their ability and professional knowledge. There is a third body known as the general board, to whom are referred questions of moment by the Secretary. The composition of this board gives great weight to its decisions, and these have come to be regarded as expressing the highest technical opinion in our country on naval subjects. Again, each bureau chief holds his authority directly from the Secretary, and orders issued by a bureau chief within the scope of his responsibility have the same weight as if signed by the Secretary. There is too much talent here to be consulted; too many authorities on highly technical matters to be coordinated and reconciled by one official to whom it is all new ground.

There is a strong feeling among officers who are familiar with the practical work of the Navy Department and who have noted the loss of efficiency which results from so many heads that the chief of operations should exercise full authority over the bureau chiefs. This I believe to be radically incorrect. It is simply an illustration of the natural desire of strong men trained to exercise authority seeking to extend their power in every direction.

In the first place, what should be the relation between the strategical branch of the navy and the logistics branch? Of course, it must be recognized that the mission of logistics is prescribed by strategy, but it is incorrect to deduce from this that strategy must direct the manner in which logistics shall perform its task. My idea is that the office of operations represents strategy and that the various bureaus of the department represent logistics; moreover, I believe that the relation of these two branches should correspond very closely with those which exist in mercantile life between the consumer and the producer.

Consider one or two special cases:

Operations (strategy) requires a number of battleships, battle-cruisers, scouts, destroyers, submarines, flying machines, etc., with certain characteristics. Operations does not produce these things; it needs them in its operations. Accordingly, operations (strategy) calls upon the bureaus (logistics) to supply them.

Or, operations finds that certain ships are in need of repairs or alterations; it calls upon the bureaus to make these repairs or alterations.

Again, operations needs officers and men in accordance with its plans and organization. It is the duty of the bureaus concerned to fill this need.

The examples could be multiplied indefinitely.

The cooperation between operations and the manufacturing bureaus should be limited to the cooperation between consumer and producer. The consumer does not enter the shops of the producer, nor does he dictate how the producer shall run his plant; but he does consult with the producer and order in accordance with his needs and what the market affords. So operations should not enter the domain of the manufacturing bureaus of the Navy Department nor dictate to these departments how their shops should be run. Operations should consult with the manufacturing bureaus, tell them what it wants, and then insist on getting it. Operations should have no authority over the bureaus outside of this. If operations cannot get what it wants, operations reports the fact to the common superior, the Secretary, who then takes such administrative action as may be necessary to correct the trouble.

Efficiency in gunnery, aviation, or in any other department of the navy is a product just as much as efficient guns, flying machines, etc. The bureau of navigation (a better name for which would be bureau of personnel) should *produce* officers and men capable of handling the matériel supplied to the fleet by the manufacturing department. A proper organization places the training of officers and men in the bureau of navigation (personnel); target practice and engineering competition have no proper place in operations.

On the other hand, inspection is a very important department of operations. In mercantile life the producer must please the consumer; competition enforces this law. There is no such competition in the Navy Department, and we must resort to inspection in order to maintain this important relation between the producer and the consumer. Accordingly, operations must develop and avail itself of a thoroughly organized system of inspection to pass judgment on personnel and matériel supplied by the bureaus on demand of operations.

In order that operations may be reasonable and logical in its demands on the bureaus, it must be competent to formulate correctly all demands and specifications for the matériel and personnel it requires, and to this end there must be free conference between operations and the bureaus, and officers of the logistics branches

should be detailed for duty in subordinate positions in the office of operations.

It is a mistake for operations to duplicate the functions of the bureaus or to take charge of or direct any of their work. Its mission is to formulate its demands from the point of view of the consumer. When it loses sight of this mission and encroaches upon the various missions of the bureaus, it violates one of the principles of organization and there is a loss of efficiency. Here again we shall be kept in the straight and narrow path if we act on the theory that operations is the *consumer* and that the bureaus are the *producers*.

We have now defined the relations between operations and the bureaus; but it is evident that if we are to get cooperation among the bureaus themselves, they cannot deal individually with operations, else we shall soon have operations the coordinating factor, which would result in operations absorbing the bureaus—and this is exactly what many able officers advocate and which the writer believes is absolutely wrong.

At present, the bureau chiefs communicate directly with the Secretary, who in general is without technical training and whose mission is policy and is not logistics any more than it is strategy. But the Secretary appears to be the only recognized coordinating factor, and the Secretary's advisory council, consisting of the chief of operations, the chiefs of bureaus, the commandant of the marine corps, and the judge advocate general, emphasizes the democratic spirit of equality existing among these various departments of the navy. This is not correct organization.

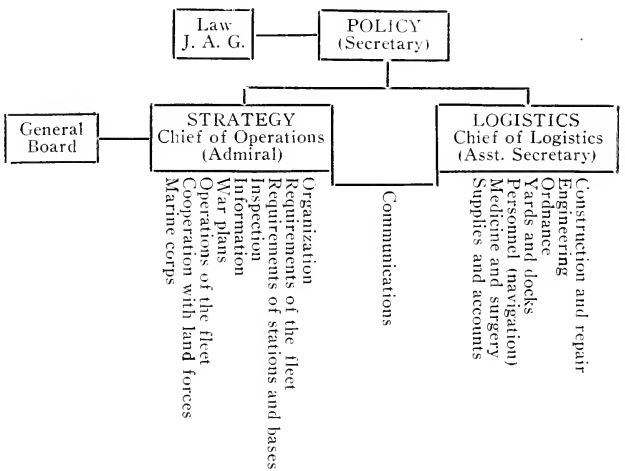
Just as all the activities of strategy are grouped under one head, the chief of operations, who is, nominally, the highest technical expert available in that branch, so the activities of logistics should be grouped under another head who should be the best technical expert available to cope with the problems he would have to handle. The office of assistant secretary of the navy offers a suitable title and position for the person selected for the task. He would necessarily have authority over the chiefs of bureaus and over navy yards as industrial establishments. Any man competent to be the president of a railroad or of a large manufacturing concern would have the necessary qualifications.

The marine corps is an organization complete in itself, with its own strategical and logistic divisions. It is correct that operations should direct its activities.

The judge advocate general is technically in the Secretary's office. He is a law officer, pure and simple, and has no other functions. He properly has nothing to do with either strategy or logistics.

The general board should be looked upon as a body of the highest technical experts to answer questions of strategy or tactics laid before them by the chief of operations. Plans of campaign drawn up in the office of operations should be thoroughly discussed by them, and they could themselves, if called upon to do so, draw up war plans for the chief of operations.

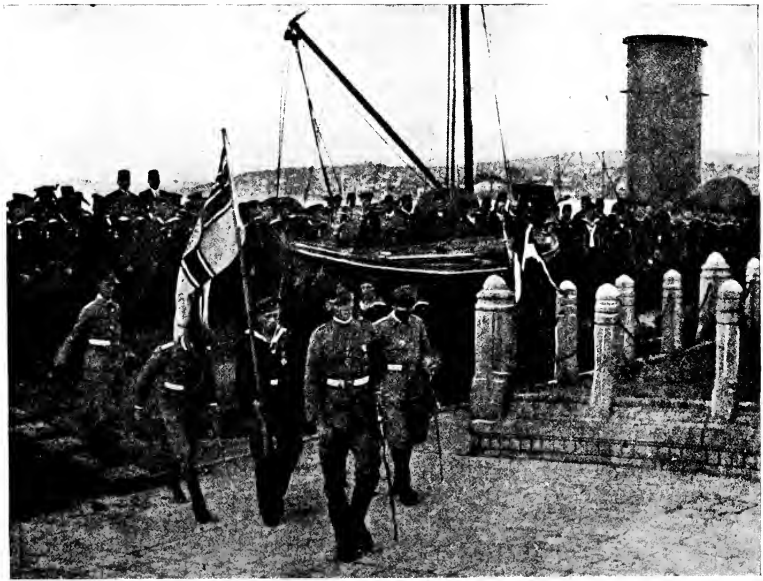
A PROPOSED ORGANIZATION OF THE NAVY DEPARTMENT, SHOWING THE RELATION OF *POLICY*, *STRATEGY* AND *LOGISTICS*



NOTE.—Logistics orders (from seniors) and recommendations (from juniors) affecting the movements of a vessel, or its efficiency to an important degree, should go through official channels, including operations. Other logistics correspondence should pass direct between the bureau concerned and the commanding officer.

There must be cordial cooperation between *strategy* and *logistics*, and both must loyally support *policy*.

The above organization eliminates the system of "balance and check," which now acts as a brake on the energy of the department. Far from diminishing the importance of the Secretary of the Navy, it enhances his importance and authority by liberating him from a multiplicity of unfamiliar details and leaves him free to exercise control and supervision, select the right man for each task, and direct the whole machine. He ceases to be the head of a number of small units, the energies of which he must constantly seek more or less effectively to coordinate; he becomes the head of an organized body, a great unit which looks to him for supervision and guidance and whose energies he controls and directs. It is "scientific management" applied to the navy.



THE COMMANDER OF THE "EMDEN" ARRIVING WITH HIS FLAG AT CONSTANTINOPLE

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

AYESHA

(CONCLUDED)

By LIEUTENANT HELLMUTH VON MÜCKE,
Imperial German Navy

Free translation by LIEUTENANT J. H. KLEIN, JR., U. S. Navy

XI. THE SHIPWRECK

The return from Sanaa was accomplished without interruption in the same manner as the march approaching that place. I went on ahead with a few men in order to hurry the preparations for another cruise at sea. I reached Hodeida about a day and a half ahead of the remainder. We managed to make the caravan trip in eight days. We rode day and night with very few pauses. Only when the animals had to be changed did we stop. As we had sent the *Choising* away, and as it was impossible to rake up any more steamers, the only way to leave Hodeida seemed to be by means of "zambuks." These are the small, open sailing vessels, rigged as "dhaus," used along this coast.

I succeeded in unearthing two zambuks at Hodeida, each about 14 meters long and 4 meters beam. These were gathered together in a small bight to the northward of Hodeida, called Jabana. Because of the French armored cruiser, which still maintained its permanent and sleepy watch, it was impossible for me to start from Hodeida. She might possibly wake up. Knowing that the country swarmed with English and French spies, I spread the rumor that I intended to sail from the bight at Isa on March 12. The expected actually happened. On the afternoon of March 12, for the first time since the beginning of the war, an English gunboat appeared in the forlorn Isa bight, which boasted neither house, tree, blade of grass nor water, and examined the beach for us with its searchlight. The poor fools, what would they not have given to have really known where we actually were!

On March 14, about 5 p. m., my squadron left Jabana. The battle-flag flew at the stern of my proud flagship, and, with three cheers to His Majesty the Kaiser, we started the cruise. Lieutenant Gerdis commanded the second flagship. Strict discipline took the place of the other absent ships of the squadron.[1] As the other zambuk was a little larger than mine, I had the sick men put aboard that one. Malaria, dysentery and typhoid still bothered the men, and I had several whose health was such as to cause me not a little uneasiness. I was unwilling, however, to leave my sick behind, as I was certain that nothing but a change of climate would improve them.

I managed to get all the latest information, such as it was, concerning the English, and I therefore knew that the English blockading ships, two gunboats and the auxiliary cruiser *Empress of Russia,* were maintaining a line of blockade from Loheiya over to Kamaran, Jebel Zebayir to Jebel Zukur. I therefore had to run this blockade with my sailboats. In order to prevent both boats from being taken at the same place, I ordered Lieutenant Gerdis to leave me. We had decided upon a rendezvous to the north where each should wait for the other a certain length of time.

Soon the second zambuk disappeared in the gathering darkness. For the first time we now began losing headway and at daybreak it was flat calm. To our great dismay we lay motionless, and at sunrise found ourselves in the exact position where we least wished to be, namely, in the middle of the English blockading line. Any minute the appearance of the tops of English masts could be expected. Our hopes ran low. The calm succeeded in holding us more effectually to this place than any action of the enemy could bring about. But I had not planned my departure for over the "week-end" without an object in view. I was sufficiently familiar with the customs of the English to know that during the week-end, that is, Saturday evening and Sunday, the gentlemen were not keen for work. And so it happened that we were not sighted throughout that whole day.

In the course of the afternoon the breeze set in again and about evening at sundown we could go to sleep with the comfortable reflection that we had, even with two becalmed sailboats, been able to run the English line of blockade.

[1] TRANSLATOR'S NOTE.—Rather difficult to properly express this German pun in English.

I continued the journey, with my light draft vessels, between the coral reefs of the Farisan bank. This is a giant coral bank, about 350 sea-miles long, where large ships cannot go, and even small boats are not entirely free from danger. During the next day, my second zambuk came in sight. She received orders to remain with me thereafter.

Life aboard the zambuks was, so to speak, right comfortable. There was not very much room. With the Arabs, who tended ship, the interpreters and pilots, we counted up 35 men per boat, so that in a space 14 meters long by 4 meters wide not much space remained for each individual. In addition, a great deal of room in the boat was given over to provisions, water, munitions and machine guns. As a protection against the glowing heat, we spread woolen blankets overhead during the day, so that at least our heads were kept in the shade. The equipment also was rather meager. In each zambuk a small open fireplace of sheet metal was built in and on this we had to cook for 30 men. We attempted to constantly change our menu with the various means at our disposal, so that on the first day we ate, for example, tough mutton with rice and grease; on the next day, rice, grease and tough mutton; on the third day, grease with tough mutton and rice; and so forth and so on. We were making very slow progress. Frequently we had to contend with calms, adverse winds and currents. We were not spared internal dissensions either. At night they raged most strenuously. Of them, the cockroaches, bugs and lice were especially active. Clothes not actually in use had to be lashed down in order to avoid the danger of having them walk away. As soon as the sun came up, shirts were pulled off and the process of "killing lice" begun. The record was 74 lice in one shirt.

On Mach 17, I signalled my squadron "I intend to anchor this evening." We had now approached the place where my accompanying pilots declared it impossible, even for our small boats, to navigate at night. About 6 p. m. we were drawing close to the Island of Marka where we intended to anchor. The pilot steered the ship for the anchorage. I, with my zambuk, led the way. The second boat followed at about 200 meters. We had a right stiff breeze and a noticeable sea on, and were glad to get into the lee of the island. But we had not reckoned on our skilful Arabian pilot. He piloted so beautifully that presently we struck a coral reef. Two, three times we hit her hard so that I had the

gravest doubts as to whether the boat would stand it. Then we again drew clear (evidently jumped it) and were in deep water once more. I anchored immediately. In order to keep the rear ship from hitting the same reef, I yelled and signalled to her. But she also hit it. She had already arrived in the coral reef, and, when turning around, struck another reef. Noticing her flag being hoisted, I knew by this sign that something serious had happened. Immediately I saw the boat slowly begin to list. From the way the mast shook I knew the ship had hit. In an instant the boat disappeared; only the mastheads inclined backwards out of the water. And this occurred close to sunset.

Night falls very quickly in this place. Ten minutes after sunset it is absolutely dark. There was no moonlight. Immediate help was necessary. We had already hoisted sail on our zambuk. All hands got busy. The anchor was torn out of the ground, and while performing a desperate maneuver, in which we almost struck the reef again, we managed to get clear and hasten to the aid of our comrades. I went as near as possible to the sunken zambuk and anchored. Due to the reefs I had to stand off about 400 meters. We had no boats to communicate with each other. Each zambuk had a so-called dugout (these are very small paddle boats chopped out of tree trunks) that could hold at most two men, and whose use was now a serious question in this high sea. I promptly sent my dugouts over to her.

Meantime it had grown dark. We had a lantern aboard our zambuk. Despite all efforts we could not light the lantern to show our location due to the breeze constantly blowing out the matches. "Bring the torches," I ordered. We had brought along several torches from the *Emden* and *Choising* for just such an emergency. They were brought out and made ready. The fuse worked, but the torches would not light. They had, in the course of months, become too wet.

Soon thereafter I heard voices in the night astern of us. They were the first of the men from the other zambuk who were swimming on past us because they could not see. We yelled and blew our battery whistles to attract their attention and, after several anxious minutes, succeeded in doing so. These men had been swimming away from the other zambuk. They had no other means of knowing which direction to swim, except by means of a star that indicated our general direction. How many men were in

the water I had no means of knowing. I was also greatly alarmed because that entire region swarmed with sharks. Above all, I knew not what had become of the sick who were too weak to help themselves. Now, once and for all, it became imperative to have light. As everything else had failed, I had wood gathered together, petroleum poured over it, and without considering the ever-present danger of a large fire in an open boat, I had the fire lighted. We held our torches in the flames until they became sufficiently dry to burn. At the same time we fired some white rockets that we still retained, and which, thank God, functioned properly, even though these rockets would call attention to us from miles around. Finally, the two dugouts returned. They were each paddled by one man and carried a sick man in addition. The remaining sick that could not help themselves were brought back either in the dugouts or were lashed alongside them in the water and towed aboard. At the same time the other swimmers arrived from all sides. Those that could not swim, and there were several, wore life preservers and tried to paddle along as best they could. By and by more returned. Soon we had over 50 men aboard so that my zambuk went down so far in the water that we could not hold any more men. I therefore ordered all superfluous cargo thrown overboard, including provisions and water, in order to lighten the ship and to endeavor to carry all the men. Only weapons, munitions and provisions and water for three days remained aboard.

Meanwhile our torches had almost burned out and I feared that the light would not last long enough to be certain of rescuing all the men from the sunken boat. Only the officers failed to arrive—and with the arrival of the last officer our last torch spluttered out. So now, at least, every man was saved. According to the advices of the officer, the sunken zambuk struck a steep coral reef and held there, and we had only our luck to thank for the fact that the masthead remained above water. It could easily have happened that the zambuk would have slid off the reef and disappeared into the deep. Then most certainly would all the sick have drowned and probably also a great portion of the non-swimmers.

Near us lay another zambuk belonging to the tribe of " Idrisz." The Idrisz is an Arabian clan which is not on good terms with the Turks, and also strongly opposed to the advent of Europeans. This zambuk had also sent her dugout to help my second sunken boat. But as soon as she saw that we were Europeans, which she

knew by the tropical helmet of our doctor, she turned around and left us to our fate. As it was rather difficult for me to proceed with an overladen boat containing about 70 men, especially when I considered the condition of our provision supply, I sent our Arabian interpreter to the Idrisz' boat shortly before daylight, to offer them a large sum for the use of their boat for a few days. They absolutely refused, however, stating that not even for £100,000 would they do anything for the dogs of Christians. It would have been an easy matter for me to have taken the zambuk by armed force, which I had planned to do that morning. The whole proceeding, however, was not a pleasant one, as a tormenting political discussion would follow such an act. It resolved itself into a question of using armed force against an ally, even though this small uncivilized part of our ally consisted of a wild tribe.

But the next day our "star shone bright" once again. A stiff and fresh southerly blow came on that made it possible to sail before the wind even with a heavily laden boat, and a speedy journey seemed to be ordained. Therefore I left the Idrisz' boat in peace.

We quickly set to work to rescue what we could from the sunken zambuk. The weapons especially were wanted. During the night the zambuk had sunk deeper. The mast broke off and the ship had capsized on the bottom. By diving we managed to salvage two machine guns, several revolvers and some ammunition. All the other stores, clothes, etc., and unfortunately our entire medical outfit, were lost. The stiff breeze pushed us ahead further that one single afternoon than we would have accomplished in perhaps six days under the preceding conditions.

In the evening we landed at Kunfidda. Here we were received in grand style, and although advance preparations could not have been made for us, nevertheless they hurriedly prepared a Turkish meal which we, according to the customs of this region, quickly devoured without the use of knives, forks, plates, etc. A whole mutton, filled with rice, was set on the table. Eagerly we set to work to tear the flesh from the carcass, meanwhile stuffing handfuls of the rice into our mouths. In Kunfidda we met a Turkish official and his wife who also wished to journey to Constantinople and therefore they joined us. This official later on in the trip performed valuable service as a dragoman, *i. e.*, as interpreter.

Quickly we found a larger zambuk in Kunfidda. We rented this one and started off, all hands in one boat. We reached Lidd in the afternoon of March 24, not having encountered any special dangers. This was the most northerly point of the Farisan bank, among whose coral reefs we had, up to this time, found security from our English searchers. And now our cruise would have to be continued on the open ocean. It was well understood that the English would do everything possible to capture us. In Lidd I happened by chance to be given a letter that had been written by a merchant in Dschidda. He wrote that many English warships were closely blockading Dschidda and that every zambuk that attempted to leave the harbor was searched by the English.

Therefore it was impossible to continue further by water. It was necessary to proceeed overland. We remained in Lidd for two days in order to gather the necessary animals and organize a caravan, to arrange for our water supply and to make such other necessary preparations as would enable us to go on ahead.

In Lidd we had our first casualty. A seaman, Keil by name, had been suffering from typhus ever since we arrived at Hodeida. The shock of the shipwreck was too much for his weakened constitution. Above all, he suffered the lack of medical assistance which we had been unable to recently give him as we had lost all our medicines. He died at 3 a. m., March 27. Two of his comrades kept constant watch at his bedside and also later, at his bier. We prepared a small rowboat, sewed the remains in sailcloth and weighted it with stones. The war-flag covered the whole. On this we placed his hat and his bared saber. After a short religious ceremony we towed the remains of our comrade out to sea and sank it in deep water. Three volleys were fired over his watery grave. It was impossible to bury him ashore as the fanatical and wild inhabitants would probably have disturbed even the peace of the dead. On March 28, we again took up the march.

XII. The Surprise

It was not an easy matter to procure in Lidd sufficient camels for the journey. Lidd is a very small town of only a few hundred inhabitants and has no commercial relations. In order to make the journey more pleasant, I considered it necessary to call on the Sheik of Lidd. This was the first time a Christian had ever entered the sheik's house.

The arrangements were made by my dragoman. After we had exchanged a few gifts he invited me to dine. His house was a wooden-framed, matting-covered affair without windows. Two divans, covered with skins, were set on the sides of the room. Weapons hung from the walls. The other furnishings of the room consisted of smoking materials. Before the meal we were served with either cups of mokka or something like lemon-sour. The mokka was the Arabian kind, that is, not the beans but the shells of the beans were boiled. The whole concoction is a bitter drink, not very pleasing to the European taste, but out of deference to our host had to be gulped down under any circumstances. While we were still sitting in the room, preparations for the meal were begun. These commenced with the laying of a fairly large, round, woven straw matting upon the bare earth. Servants then entered and heaped a mountain of rice on the straw mat. A small can of preserved mixed pickles completed the table arrangements. One sat, rather one lay, at the table. For all that, everybody was provided with a spoon. All hands set gayly to work on the rice mountain. Meantime, in front of the house, the meat was being prepared, consisting of a whole roasted sheep. There were no knives and forks. Even the mutton did not appear on the table; instead, the two servants detailed for our service tore chunks of mutton from the sheep with their hands and laid the torn-off pieces on the straw matting before each of us.

During the two days spent in Hidd we succeeded in gathering in about 90 camels. With these we could begin the march. The remaining camels we could pick up on the road the next day, so said the sheik. I bought a large outfit of straw mats which I divided among my people. These later on proved their worth as sunshades. In the evening we formed our caravan and left the place, taking up our march into the desert. A large number of camels carried only equipage, especially water, munitions, machine guns and provisions. The water supply was not satisfactory. I had to count on difficulties which would prevent our replenishing our water supply for days at a time.

A journey with camels is very tedious. Sometimes the camel goes ahead, and, according to its standard, not very fast; but we had a caravan of 90 at first, later on, 110 camels. Except for the officers' camels, which were running singly, the other animals were tied together (in that the snout of the rear animal was con-

nected with the tail of the one forward of it by a line about 4 meters long). A line of camels connected together in such a way could not, of course, proceed at the same speed that a single camel would travel, instead the speed of the whole line was limited by the speed of the slowest camel. Frequently halts had to be made because the packs slid sideways, the girths had to be replaced, the saddles fell off, and so forth.

We kept to a trail that skirted the sea. The entire region is unsafe. Robberies and caravan attacks occur daily. Since leaving Lidd we carried our guns loaded and ready for action. Luckily for us, the nights were light, due to a full moon. According to rule, we travelled from 4 p. m. until the next morning between 9 and 10, or whenever we reached a place where we intended to rest. The average day's work was approximately 14 to 18 hours' riding. Camels are pacers. The riding, therefore, was quite tiresome. The watering places that we passed were holes about 12 to 14 meters deep, dug down in the desert sand, into which leather bags are lowered in order to draw water. The expression "water" does not mean water according to the European definition of that word. On the ground around the water-holes we frequently saw dog carcasses, sheep skeletons and such. The water was an evil-smelling, brown to black colored hog-wash, full of animals. In any case, it could not possibly be used before boiling. Frequently it had a very salty taste.

We were piloted from Lidd by a Turkish officer and seven gendarmes. Further along we were guided by the Arabian sheik of the territory in which we happened to be; because it is the custom to take the man, responsible for your safety, along with you as hostage. Such measures are not unusual in this region. And so our journey continued without interruption until March 31.

On this day, about 11 a. m., we arrived at a water-hole one day's journey distant from Dschidda. Dschidda was our next goal. At this water-hole we found an officer and 17 gendarmes who had come out from Dschidda as emissaries to greet us for our Turkish allies and the civil population of Dschidda. Also they brought us a bountiful supply of water. We made the usual arrangements at this water-hole, hung our straw mats and woolen blankets over the low bushes and lay down with our heads under these so as, by hook or by crook, to get some shelter from the sun's rays. Cooking began as usual, as soon as we were sheltered. Usually by this

time all hands had gathered all the dry wood lying around. Then we immediately built a regular fire and the customary food (rice, and when we had luck, mutton) was prepared at once.

When I saw these men who were sent out from Dschidda, I thought that at last the most dangerous part of our trip was over. We were now again approaching a city in which a strong garrison of 300 men was to be found, so I said to myself that if 17 men could safely travel this distance out from Dschidda, then could I, most certainly, with my 50 men safely travel the same distance in to Dschidda.

This region is inhabited by a clan consisting entirely of direct descendants of the prophet, but nevertheless noted because of its wildness and its thieving proclivities. The name of the region, which is very illustrative, is "Father of Wolves."

As usual we got under way about 4 o'clock in the afternoon. The trail led a distance inland from the sea. The country consisted of nothing but sand-hills. It was never possible to see more than 400 meters away. As soon as we had ridden over one sand-hill, the next immediately cut off a further view. Tufts of tough grass, about 2 feet high, grew all over the hills. Suddenly, on our right hand, well off the caravan trail, appeared about 12 or 15 Bedouins, riding at a brisk trot, and disappeared in the direction from which we had come. That was something strange, because, according to the rules governing caravans for thousands of years, it was understood that the usual trails should never be departed from, and, further, it was understood that no one should trot at night. Also our Turkish guides thought they were robbers, as it was reported in Dschidda that a band of 40 thieves were roaming around. While at Lidd I sent information on ahead to the authorities at Dschidda and also at Mekka, so I was reasonably certain that the entire region between these points would know of our coming. Everybody would also know that we were not an ordinary commercial caravan, accompanied merely by the usual guard, but that our caravan consisted of 50 armed men especially equipped with four machine guns. Therefore I had not worried much about the 40 thieves roaming around here. In order to be better able to control and protect my men, I broke the long line of camels into two parts, making two lines of 50 camels each. I forbade the usual sleeping aboard the camels, had the guns prepared, and saw everything cleared for action. The orders for my men were, no matter what happened, to "Gather around the leader!"

The officers rode at the head of the caravan. As the first light of day appeared over the high mountains, rising up out of the desert on our right hand, I began to believe that all was well and that an attack by Bedouins in daylight was not to be expected. I therefore hung my rifle over the saddle, unstrapped my heavy cartridge belt and rode slowly along the caravan to inspect the right flank.

I had arrived at the middle of the caravan when I suddenly heard a clear, sharp whistle, followed by the crash of a volley. A rain of lead fell uninterruptedly upon our caravan from all sides and at short range. The whizzing and whistling of bullets was so loud and continuous that I was unable to make myself heard sufficiently to give orders. I tore my gun off the saddle, sprang to the ground and ran forward followed by my men. At the head of the caravan the engagement had really commenced. We could see the flashes of the enemy guns through the twilight about 80 meters away. The riflemen themselves could not be seen, nor could they see us much better, while the tall forms of the camels were plainly visible, forming excellent targets for the enemy. Our only points of aim were the flashes of the enemy guns. As we were attacked on all sides, it was impossible to decide which way to turn next. The larger part of my men lay up forward with me. A small part remained at the rear as per my orders. Then we decided to bring our best weapons, the machine guns, into action. Two of these were tied up on the camels up forward, the other two at the rear. After a few moments the machine guns were brought into action, and hardly had they begun to rattle off their salvos over the enemy's line, when the enemy, not accustomed to this new form of attack, ceased firing. We made use of this pause to pull the still standing camels to the ground, so that they would not make such excellent targets, and then we issued out ammunition and consolidated our forces.

Having received the heaviest fire from forward and to the left, I brought my men up to that point. Our offensive equipment consisted of four machine guns, 13 German rifles, 10 old Turkish rifles that I received in Kunfidda to replace the ones lost out of the zambuk, and three modern Turkish rifles that were divided among the officers. In addition, we had 24 revolvers, but these could only be used for close action. I could not determine the exact strength of the enemy. There might have been 60 or 70 firing rapidly, or there might possibly have been considerably more firing leisurely.

The question of enemy strength would soon be answered when the approaching daylight appeared. As it grew lighter we could see that all the nearest sand-hills, completely surrounding us, were black with Bedouins. My men behaved excellently. In spite of the overwhelming strength of the enemy, who were estimated at not less than 300, there was not the slightest sign of fear among any of my men. Although I had not given any orders, bayonets had been fixed on the muzzles of all the rifles. While I was considering what should next be done, the answer to my question came from a man lying close to me on my right hand, who said: "What next? Are we going to start soon, lieutenant?" "What do?" was my return question. "Why, charge them, of course!" replied this 18-year-old stripling. "So be it. You are right. Rise and charge!" And, amid loud cheers, we charged the enemy's line. Such a proceeding at a caravan-looting was certainly something new. Likewise very few shots came from the enemy. When the glittering bayonets came on, the enemy fled precipitously. Our fire, thinning out his ranks, followed him. First we charged to the left, then forward, and then to the right. It was unnecessary to charge the rear. They had already disappeared in that quarter.

In that way we widened the surrounding circle so that the enemy was now about 1200 meters away. The firing ceased. I assembled my men around the caravan. The machine guns remained in position all ready for instant use.

In spite of the rain of bullets, which they showered on us at almost point-blank range, we had, thank God, but one German wounded. But when I turned toward our Arabian allies I was dumfounded. In Germany we have a proverb that says "He counts the number of his loved ones, and behold, instead of six he finds seven." But here this proverb was reversed. Of the 24 gendarmes there remained but seven. There were no deaths. The missing ones we found later on in Dschidda. The Arabs that stood by us had been hit in the legs. This was caused by their remaining behind seeking shelter among the camels instead of advancing on the enemy with us. As my men were firing from the ground at a distance of about 30 to 40 meters in advance of the camels, the enemy could not see them in the dark and fired over their heads. They could only see the large camels. Before it occurred to the Arabs to drag the camels down to earth and thereby be better protected, the enemy bullets flew between the camels' legs and struck the precious bodies of these heroes.

We knew nothing of course concerning the enemy's casualties. We did, however, count 15 dead ones in the places they abandoned when we charged. These corpses, except one, had neither rifles nor ammunition. According to Bedouin custom, the fallen are despoiled of their weapons. The single gun captured, a breech-loading rifle of modern English construction, was added to our service. We could still see the Bedouins on the sand-hills in the distance. As soon as any of them showed themselves, they were immediately fired upon, because it then occurred to me to give them a good moral lesson.

We could not remain in our present position very long. At first I had an idea that I was confronted merely by an ordinary robbery, and imagined that the enemy, having already suffered a handsome loss, would see the error of his ways and accordingly disappear.

A large number of our camels were struck. We unstrapped all supplies from them that were of any value, especially the water, and placed them on the other camels instead of the less necessary equipment which we then left behind.

I decided to turn sharp to the left in the direction of the sea, which could be discerned shimmering in the distance. If I reached there I would have at least one flank free. It certainly angered me to be unable to use the machine guns on the march as I had no suitable gun carriages. They had to be carried on camels. In order to keep the caravan closely consolidated, I formed it in ranks of four to six camels. The wounded were secured to the sides of the camels away from the enemy so as to be better protected. Two camels with two machine guns rode out ahead, the other two machine guns were similarly carried at the rear; an advance guard of 10 men in open order preceded the caravan by about 150 meters, a rear guard of 10 men also marched the same distance in the rear. Nine men with rifles were disposed as best we could on the two flanks. The other men, armed solely with revolvers and who could, therefore, only fight at short range, remained in the middle of the caravan. The advance guard was commanded by Lieutenant Gerdis, the rear guard by Lieutenant Schmidt, the flanks by Lieutenant Gyszling. The caravan itself, with Dr. Lang in charge of the wounded, was led by Lieutenant Wellmann.

Slowly we got underway; flags waving at the head. My hopes that the enemy would not further molest us were not fulfilled. After marching about 10 minutes we were fired on again from all

sides. We could hardly see the enemy. The sand-hills prevented our looking ahead further than 400 meters. We could only see about 10 or 20 black heads bob up on this sand-hill and then on that sand-hill. The next instant a salvo would fall around the caravan, and before we could prepare to return the fire the heads would disappear and another hail of lead would come from a different direction.

Most remarkably, we had no casualties at first, even though the enemy's fire was heavy, small sand splashes rising about us, while pebbles and sand flecks flew up into our faces. Soon we discovered that the heaviest attack was directed on the rear guard. Every few minutes the men there had to turn about and, by heavy firing, check the enemy.

I was with the rear guard when I received word from forward that strong detachments of the enemy were forming ahead of us. On arrival at the advance guard I found the whole horizon black with Bedouins. At the same time I received word from aft that one of the camels carrying a machine gun was shot down. The rear guard stopped to cover the machine gun and Lieutenant Schmidt ordered another camel unloaded and sent to the rear. I had already heard the machine guns of the rear guard firing. They had, in the meantime, been unstrapped and run into action.

I then brought the caravan to a halt, which was not an easy matter as the majority of the Arabian gendarmes and camel drivers had deserted into the night at the beginning of the fight. On my way to the rear guard I received word that a seaman, Rademacher by name, had been killed and that Lieutenant Schmidt was fatally wounded by bullets through his abdomen and breast. Lieutenant Wellman had by this time assumed command of the rear guard, bringing with him from the caravan two animals to carry the machine guns.

As we waited, the enemy's fire again increased and soon we were in the midst of a lively engagement. Suddenly, as if by magic, the firing absolutely ceased, and as I dumfoundedly looked around for the reason, I saw two of the still remaining Arabian gendarmes waving large white cloths and running toward the enemy. At the same time a third Arabian gendarme came to me to explain that his comrades wished to hold a parley with the enemy. As unnecessary as I deemed this to be, it was from the first wholly pleasing, because I had in the meantime clearly seen that this was

not an ordinary robbery, but that we actually faced an organized military situation. As we were outnumbered at least ten to one, a march with camels on the open level under the continuous fire of the enemy was impossible. My most powerful weapons, the machine guns, could not be used on the march, and my 29 rifles were not much protection as I had an insufficient number of men to use them on all sides at the same time. And finally we would gradually be picked off one after the other as we proceeded.

We used the pause in the firing to intrench ourselves. We made breastworks out of camel saddles (filled with sand), coffee, rice and provision sacks. The encircling walls we filled up, to the best of our ability, with sand. In the middle of the camp we gathered the camels. Loop-holes were made in great haste. Other facilities lacking, we made the loop-holes with our swords and tin plates (scoops). Of course, our construction work was done so hurriedly that it was not as efficient as could be desired. We buried the water containers deep in the sand so that the enemy bullets would not rip them open and thus inflict irreparable damage. In the middle of the camp we constructed another small protection out of sand-filled petroleum tins, the walls being about 1½ meters thick. Within this we placed the disabled and sick men, the wounded and the doctor.

As we could expect to be attacked from all sides, and as our breastworks protected us only from the front, we so placed the camels around the sides that we also had "living" protection from the rear. Lieutenant Schmidt, fatally wounded, was carried into the camp on a stretcher made of rifles and woolen blankets. The dead seaman was buried then and there.

The four machine guns were planted at the corners, each hastily protected by a hurriedly thrown up sand-hill. The riflemen were detailed around to the important points, the men armed with revolvers were shoved into the gaps, and ammunition served out. We had hardly finished these preparations when the enemy's terms (stipulations) arrived. They were:

"Deliver all weapons and ammunition, all camels, all provisions and water, and pay £11,000 in gold. We could then proceed unmolested." Now what do you think of that!

The negotiations were started by the dragoman, who, with his wife, had joined us at Kunfidda. He also was wounded! Shot in the legs! When he went out to parley, he did not forget to take his wife along. The next time we saw them was in Dschidda.

The answer that I gave, declared:

"In the first place we had no money. In the second place we were guests of the land. Get your gold in Dschidda. In the third place it is not a German custom to deliver up our arms."

And then the firing recommenced. The remaining camel drivers and a number of the Arabian gendarmes improved their time so well during the pause that they followed our interpreter and his wife and also disappeared. The fighting continued until dark. Lying there between our camels and their saddles, we were fairly well protected. I ordered that their fire be returned slowly. We did not have a great quantity of ammunition and we found many cartridges that failed to fire owing to their having been submerged overnight when the zambuk capsized. Therefore I saved all the best ammunition for the machine guns so that in case of a night attack I could count on my most powerful weapons for a fight at close quarters. The remaining ammunition was divided among the riflemen. We had no further casualties. A number of camels were shot, but that did not lessen our protection. A dead camel holds just as many bullets as a live one. The whole day, however, we did not eat. We had no time to think of that during daylight. No sooner would one of our men poke his head over the saddles than a heavy fire was showered on us.

The principal work started at nightfall. About one hour after sunset the moon rose. During this hour it was so dark that we could hardly see more than 40 or 50 meters. Everything in the camp was cleared for repelling an attack in case they stormed us. All rifles and pistols were loaded, and machine guns made ready for instant use, the men kneeling with their guns resting on the breastworks. But nothing happened. With the rising of the moon we could see about 300 meters and then we set to work to improve our camp. First we issued out water and passed around some hardtack. A part of the officers and men remained on watch and ready. The others continued to dig the trenches deeper, a job which proceeded very slowly because of the lack of proper tools. The dead camels had to be gotten rid of. The carcasses decayed very rapidly in the extreme heat. They swelled up, the skin burst (along the welts caused by whipping) leaving the entrails exposed.

It was long into the night before our work had progressed sufficiently so that we could no longer begrudge ourselves a little rest. The trenches were now deep enough to afford sufficient protection

to a man lying down. On all sides, outboard of the camels, we built sand-hills. The rifles and revolvers were so choked with sand that they had to be taken apart, cleaned and then proof fired. Then we bound up the breech mechanisms with our handkerchiefs and placed small rag wads in the muzzles in order to keep out the sand. Above all things, the weapons had to be protected. In camp we kept a sort of watch in that a certain portion of men remained on post. The remainder were allowed to sleep on their loaded arms. One officer was always on watch. During the night the enemy did not attempt anything startling.

At 9 p. m. Lieutenant Schmidt, who had been fatally wounded, died. We dug a deep grave in the middle of the camp and about 11 p. m. we four officers carried our comrade to his last resting place. The funeral had to be conducted without the honors of volley firing. This honor was paid our dead on the next day by the enemy.

As Dschidda was only 10 hours away by camel and eight hours on foot, I sent, during the hour preceding moonlight, an English-speaking Arab that I had brought from Hodeida, into the town. The man had always appeared to be sensible and reliable. As I learned later, he was able to steal through the enemy lines and to carry the information about our camp to the military authorities at Dschidda.

A half hour before sunrise I had all hands awakened. This in case the enemy was there and waiting to recommence the fighting as early as possible. I intended, in order to make a moral impression, to immediately answer his first shots with heavy salvos so that he would know that we were all on watch and that our strength had not diminished.

My expectations were realized. At sunrise the enemy opened a heavy fire. We answered immediately, energetically firing full salvos, and each head that was exposed was soon covered by our fire. This proceeding as we could see, lowered the morale of the enemy. His firing grew markedly more cautious and weak. We had therefore accomplished our purpose.

Prior to sunrise, each man was given a glass of water. For the remainder of the day I could not let them have any more. Not until after sunset was it possible to take another drink. As we could not cook during the night, the hardtack were eagerly eaten and pockets were stuffed full of them.

The enemy fired in a desultory manner. As we were very well protected, we gave only a weak reply. That we were not dealing with an ordinary robbery, but with an organized force instead, was presently clearly made known to us. From our camp we could see two large zambuks at anchor off the coast. A regular transportation service was being conducted between the zambuks and our besiegers. No doubt most of our enemies arrived there in these two ships. Another part came from overland because we could see a great horde of camels grazing along the desert horizon.

Unfortunately we had two more severely wounded that day. Of these, a fireman, Lanig by name, shot through the breast and stomach, died during the night. We could not give our wounded much medical assistance, as we had lost all our medical outfit when the zambuk sank. Luckily we still had some of the *Emden's* first-aid packages (that is, rolls of medicated bandages) and several bottles of cognac.

The day was uneventful. We were made uncomfortable, however, because one of the camels which broke out of the camp was shot to windward and the wind carried the most penetrating and putrid odors toward us. In the camp itself we were pestered by some most unwelcome guests. Hundreds of thousands of disgusting black beetles, about as long as one's thumb, ran right and left over the whole camp carrying camel manure. Our trenches were full of these animals and no matter how many one killed or trod on there were always more coming. Sleeping was practically out of the question. They crawled in through your clothes and walked out over your face. Moreover, in addition to being extremely unpleasant they introduced an immediate danger to our wounded; tetanus germs breed more quickly in horse and camel manure than in anything else. Such an infection is always followed by the absolutely deadly lockjaw.

The glowing sun made living in the daytime almost unbearable. Our light-colored head-dress could not be worn as it furnished the enemy a fine point of aim, while the dazzling light caused smarting eyes and headaches. It was so hot that one's hands were burned while shooting if the barrel of the gun were touched. The grease-soaked camel saddles began to swell, due to heat, and the ensuing smoky odor constantly pervaded the camp. We covered the saddles with sand as best we could. The wind never ceased blowing fine particles of sand all over us. Meantime we had to dig out the

trenches again because they became half filled with sand. The fine sand particles entered the eyes, ears, mouth and nose. The eyes burned from this continuous irritation. A heavy sand coat, made by the perspiration, covered our faces so as to make us unrecognizable. About 20 to 30 vultures circled high in the air above the camp.

At sunset the regular preparations were made again. Two Arabian gendarmes, disguised as Bedouins, were sent as messengers this night to Dschidda. When the moon rose the men not on watch lay down to sleep. The enemy began to fire when night fell.

In the middle of the night our sentries began to shoot. Everything was ready for action, standing by to repulse the expected attack. "Where are they?" I asked the sentry. "Here, there were several crawling around about 40 meters away." And then a shower of lead was fired at them. Our guess that these were enemies was a mistake. They were hyenas and jackals that had crept up around the camp looking for prey and found the camels' carcasses to feast on.

And now the sun rose for the third time over our camp. Our situation was critical. We had received no signs as yet from the Turkish garrison that our messengers had arrived, as they should have done, the preceding day. We could hold out this one day and then the water would be gone in spite of the fact that each man received only one small cup of water each morning and evening. Without water we were lost. We had to do something before our men lost their strength. So I gave the order that morning that we would make a powerful attempt to break through to Dschidda at sunset unless some news came in the course of the day. I had hoped thereby to get at least some part of my men through. Whoever fell, fell. The sick and wounded could not be taken along. We hoped to God that such extreme measures would not have to be adopted.

About noon on the third day, a man waving a white cloth suddenly appeared from that side where the firing had ceased. I admitted him to the camp and asked what he wanted. He answered that the enemy had abandoned the idea of our delivering up our arms, munitions, camels, provisions and water. Instead we should pay £22,000 in gold. I guessed that the enemy had information that the Turkish garrison was coming out and that now, as is customary with these people, they were endeavoring, as a last

resort, to get as much out of us as they possibly could. I therefore decided to draw out the proceedings as long as practicable, to ward off the raising of the siege, and then to bring the enemy between two fires. Therefore I painted a rosy description of our camp and pretended that nothing could be more agreeable to us than to spend the fresh summer in the desert, the music of salvo firing being very pleasant. I showed the man the place where our empty water containers were buried and made it clear to him that with that amount of water I could comfortably hold out four weeks longer, and therefore I knew no reason why I should agree to any disadvantageous terms. Munitions I had in abundance, as he knew. They could thank their lucky stars that I hadn't turned my machine guns loose on them and pressed the attack home. The parley was held through a Moroccan, who had been taken prisoner in Belgium and was sent back from there along with the other Mohammedans to Turkey. He had accompanied an expedition into Arabia, was picked up by me in Kunfidda and still remained with us. He spoke a little broken French.

The enemy's emissary did not seem to be much impressed with my explanation. He left, but returned in another half hour and offered the same terms. In order to gain time I told him that I preferred above all to do business with the enemy commander in person, and invited the commander himself to visit me in my camp. The suspicious angel came not, but instead sent me the terrible threat that since we refused to pay, we would now have *beaucoup de combat*. I took this to mean that it was high time for him to leave and I expressed my surprise that their previous actions should also not be classed as *beaucoup de combat*.

To me it had seemed so. Then we received some furious and violent salvos. Following this a dead silence ensued.

A quarter and then a half hour passed without a single shot. Slowly and carefully we raised our heads over the camel saddles. Nothing in sight. "Be careful," I said, "that is only a ruse. Keep under cover! We have plenty of time. We can't leave before evening anyway." But as nothing further happened we began to get up, first on our knees, then finally we stood up and searched with our glasses. Nothing in sight. We knew not where they had disappeared. The sand-hills of the desert that swallowed them up now cut off our view. Evidently they had withdrawn.

The next thing to do was to remain lying, because I was not yet certain the enemy had really retreated or whether he was trying to fool us. Anyway, we could not possibly proceed before night.

About an hour after the firing ceased two camel riders appeared, who, from their clothes and rich saddle cloths, were recognized as belonging to a class above the Bedouins. Waving a white cloth they rode up to our camp. We hoisted up our battle-flag as a sign that we had seen them. They rode up to within 50 meters and then dismounted. I sent my Moroccan out to them to find out what they wanted. The answer came back that they wished to speak to the commander of the German troops. They came from the Emir of Mecca, who had heard of the attack made on us and was sending troops to our aid.

That sounded pretty good, but there appeared no signs that this was really true. I had grown sufficiently accustomed to Arabia to be rather distrustful. I went out to them with my bared saber in my hand; behind me marched one of my men with his gun ready. I gave orders in the camp to be ready for an attack, and in case of any attack on me to commence firing regardless of my personal safety. But nothing occurred. The two men declared to me that the second son of the Emir of Mecca, Abdullah, would soon ride up with his troop. Correct, a half hour later a caravan of 70 camel riders appeared on the horizon carrying a dark red banner on which were inscribed various Koran characters. They made some sort of music on their drums and sang to it. This proceeding I thought to be rather imprudent as the troops were supposed to be ready to go into battle.

Abdullah approached to greet me. He conveyed the compliments of his father, spoke his regrets at our having been attacked and said that he had water for us; we could now quietly proceed to Dschidda, as our enemies had retreated.

I distributed the water among my men, then under great difficulties packed the camels, a job which is not an easy one as "getting a camel ready" had not heretofore been described in the *Bluejacket's Manual* of the navy. A large amount of provisions had to be left behind because about 40 of our camels had been shot. Accompanied by the emir's troops, we left the camp. It is certainly a rare occurrence to see a Christian riding in the desert under the flag of the prophet, next to the son of the Emir of Mecca. After a few minutes we passed over the abandoned lines of the enemy.

The scoundrels had actually built themselves perfectly good trenches.

We rode the whole of the next day and then encamped at a well. Here, for the first time in four days, we were able to have cooked food, to wash and to lie down to rest. The well was probably supplied with water by a spring and was about 40 meters deep. The water that we drew from this well was warm, probably about 30° Celsius.

From our camp, close to the edge of the sea, we could see a restless searchlight sweeping through the darkness. Our friends, the English, before Dschidda!

XIII. To the Railroad

We were very comfortably quartered in Dschidda. The sick and wounded were given good treatment in a military hospital. It was hard to decide which way to continue my journey. I was told that the Bedouins who had attacked us were paid to do so by the English; and they were armed with the most modern English rifles. Leaving here by water was next to impossible. The numerous tips of the masts of the English blockading fleet were visible daily. In spite of that I decided to leave in zambuks. I still continued to believe that the sea routes contained greater possibilities than the land routes.

Therefore it now became necessary to spread the rumor that I expected to proceed overland. Secretly, however, I procured a zambuk and a reliable pilot. I was forced to remain in Dschidda several days because of the wounded. The departure date was set for April 8. I used a small motorboat, which I discovered in Dschidda harbor, to make a reconnaissance out to sea for a considerable distance. I saw no English. Was it possible that they actually swallowed the rumor about the overland route!

Having found a favorable breeze during the night of April 8-9, we started out. Conditions were much more favorable than when we broke through the English blockade off Hodeida. The wind held through the night and by sunrise we were out of sight of the blockading English. I kept the zambuk as near the beach as possible, squeezing closely to all the reefs in order to render pursuit more difficult. Slowly, but surely, we made headway. We stopped for a short time, not more than a few hours, at several

small coast towns in order to get the latest information and to purchase fresh provisions. The pilot I carried from Dschidda knew the coast very well and, in addition, spoke fairly good English. We anchored at night because we dared not sail through the reefs in the dark. At Scherm, Rabegh, I changed zambuks. The one I brought from Dschidda was very frail. We had to fill the new zambuk with sand ballast. Without either cargo or sand ballast, it was not very safe to sail her.

The evening anchoring was invariably an unusual evolution. We could not anchor wherever we wished. The coral reefs, among which we sailed, were surrounded by great depths of water. We anchored in something like the following manner. Sailing up to within a few meters of the reef we would douse sail. Two Arabs were standing on the bow ready to jump overboard, carrying with them a small line with iron grapnel hooks on it. These hooks were jammed in the cavities under the blocks of coral that were found near the surface. And so we lay. This was not always practicable, however, because in case the wind shifted we would have been set on the coral bank and stuck fast.

We encountered a few sailing ships approaching from the north. It is an Arabian custom for two ships, when meeting, to greet each other with "howling." The passing ships were somewhat surprised to hear our 50 strong throats chiming in with the energetic howling of their native associates of our zambuk.

There are no coast clans along this entire stretch, but we did encounter out at sea some small dugouts containing Arabians engaged in fishing; and on those occasions we substituted fish for rice on our menu.

Along the way northward we passed Mecca. The Arabians, as is their custom, carried on their prayers five times each day facing toward their holy city, bumping their foreheads on the ground. And so it happened that in the first days they faced forward when praying, later on they faced to starboard, and finally they faced aft.

Encountering no unusual difficulties we reached (April 28) Scherm Mannaiburra, a small protected harbor about 10 miles south of "El Weg," our goal. From there on we had to proceed without the protection of reefs, deep water being found close up to the beach. We had succeeded in hewing our way through for approximately the past six months, so it was now up to us to avoid every possible danger on this last stretch which was still dangerous.

So I decided not to sail this distance, but to anchor off Scherm Munnaiburra and proceed overland to El Weg.

The authorities there had been previously notified of our coming by messengers who had gone overland. Several gendarmes had been sent out along the coast to meet us. One of these we picked up at our anchorage and sent him ahead to provide camels. During the night we could see small signal fires on the beach which showed us that our caravan had already been assembled. We took our guns and only sufficient provisions for one day. The remainder we sent back, with our compliments, on the zambuk. Luckily, this zambuk also managed to return home without sighting an enemy ship. We arrived at El Weg in the evening of April 29.

The first thing we did here was to get thoroughly rested, also thoroughly bathed. Here, also, we finally secured another opportunity of having our clothes washed and changed. It took two days to prepare the caravan.

About 8 a. m., May 2, we marched out. In the north camels are ridden differently than they are ridden in the south. Down south, as we well knew, the camels are secured one behind the other in a long row, while up here in the north this is not customary. Each animal is ridden singly and must therefore be steered by its own rider. This was difficult at first, but after a while my men grew accustomed to it and managed to keep their beasts in hand, so that the caravan kept together after a fashion. We were guided by the Sheik Suleiman from El Weg.

At first we marched through the desert, sufficiently familiar to us. But soon we came to a beautiful region. We went through the mountains amid wonderful scenery. The water supply also was much better than on our previous desert journeys. The wells were more numerous, supplying drinkable, even though not quite clean, water. Our Arabian guides had told us several days before that we should be greatly surprised when we saw running water on the top of the mountain. We did find the rivulet and it was actually flowing, but the whole thing could be stopped by a man placing both feet across the channel. As it was quite cool, we marched in the mountains during daylight and slept by night.

As we had heretofore experienced so much danger in the desert, we intrenched ourselves each night, to the bewilderment of the Arabian guides. But we had finally reached the conclusion that no one was to be trusted. The intrenching did not take long because

we had now provided ourselves with shovels. And so each evening we built a small armed camp in the desert from which pointed four threatening machine guns. We made no watch fires in the middle of the camp, but the sentries on outposts that circled the camp built fires which made sufficient illumination. As usual, we slept on our loaded arms. A camp such as this was not what you might call comfortable. The nights were very cold. Most of us had to give up our blankets to the sick men. But those that had no blankets did not complain, but simply followed the old rule, *i. e.*, "Lie on your back and cover yourself with your stomach."

The territory of our guide, Suleiman Pascha, did not quite reach to El Ula, where we would arrive at the Hedschas Railroad. Close to El Ula we would come into the territory of some other sheik who was not on good terms with our friends, so I could not use his camels on the last four hours of the trip through the other sheik's territory. Under these circumstances it appeared as if we would have to make another strenuous "breaking-through" attempt. Suleiman Pascha also expected something of the sort. During the course of the day all the shiek's adherents from the surrounding mountains joined him in small bodies, until the caravan finally reached a total strength of about 400 men. They certainly did make a most picturesque sight with their long Arabian guns, flowing brown robes and fluttering head-cloths. Although previously to this we had intrenched for our own protection, now Suleiman Pascha himself adopted similar protective measures for his men. A sign that conditions here were rather unsettled. We ourselves made similar detailed preparations. But the night passed quietly.

Now we were only one day's journey from the railroad station. Our trail led through high mountains. There were some narrow passes to go through which seemed to have been especially built for making a surprise attack. Only one camel at a time could pass along so the caravan had to be strung out in a very long line and could not be maneuvered as a unit. In order to avoid a surprise, Suleiman organized a regular reconnoitering force which was wonderful to behold. Possibly this excellent reconnaissance was due to no little practice along that line in the past. Small patrols galloped ahead into each valley, collected information and raced back again to inform the main caravan. They reported that the wicked sheik of the next territory was, for the present, engaged in a raid to the northward, so we could proceed unmolested.

When I heard this news I decided to ride on ahead of the caravan in order to get on the wire at El Ula as soon as possible in order to provide for a special train and make the necessary preparations for the accommodations for my men. A few hours of trotting took me out of the territory of Suleiman Pascha, his two sons and the various other worthies. We made good friends with the shiek and his two sons, even though we could not thoroughly understand each other. The greatest interest was aroused among all three when, as we came through a mountain pass and could see the distant houses of El Ula among the palms, I took out my binoculars and endeavored to once more find a trace of a railroad line or a telegraph wire. Binoculars had never been heard of before in this country. Each wanted to see through them so the glasses were passed from hand to hand, each one continuing to turn the focussing arrangement a little more. What the last one managed to see was a mystery to me. In order to impress the accompanying Arabs with the power of our weapons, I fired a short string from a machine gun, much to the astonishment of Suleiman Pascha. He did not dare to turn his head, and was much pleased when I brought down a continuous stream of stones from the cliffs at which I was aiming. As all Arabs are exceedingly interested in firearms, I gave the Pascha and his two sons each a revolver and some ammunition and I promised to send him a pair of binoculars from Germany.

As we were passing along a very high plain whose limits could hardly be seen, I used this occasion to impress the sheik with the might of Germany. He was very astonished when I told him that a German ship could bring the enemy under fire even at a range much greater than the distance across this plain. Although this was a bit overdrawn, as the plain reached from one horizon to the other, it nevertheless created the desired impression. In regard to the size of the guns, I told him that a camel could comfortably gallop through inside of one.

I reached El Ula about noon and to my surprise found everything already prepared. A special train awaited us, the engine being all ready for the order to light fires. And this order was speedily given. Two German gentlemen and a number of Turkish officers had come way down there to meet us, bringing us letters and information, and, from the German Colony in Syria, presents of cold Rhine wine, Sekt, pears and such other tasty bits which we

had not had in a long time. When I first had to choose between bathing or drinking wine, I chose the latter. Why suddenly break off our pleasant habits after remaining true to them for weeks at a time?

A few hours later my men also rode in.

I rode out a piece to meet them, and, while being photographed from all sides, with flying flags we made our entry into this small town whose railroad line and waiting room gave us our first sight of real evidences of civilization. Wonderful food, very wonderful drinks, a short bath (of course) took up the next few hours. Then the train started north at the unheard of speed of 30 kilometers per hour, while we gave ourselves up to the long lost luxury of stretching out our weary bones on the red cushions.

XIV. Homeward Bound

During the remainder of the journey we anticipated no further dangers. We travelled by rail via Damascus and Aleppo through Asia Minor toward Constantinople. At two places we had to leave the train and proceed in wagons and afoot, as the line is not completed clear through.

In the most hospitable and whole-souled manner we were everywhere received by the German population and by the Turkish authorities. At every depot we found large crowds of people to greet us. We were received with music and waving flags and decorated with roses. Gifts were showered into our cars. We were provided with complete new outfits of clothing, and without tears we discarded our old rags and their millions of co-inhabitants. My men, who had heretofore not been accorded such an unusual distinction, were invited to sit at the same table with the exalted functionaries and high civil authorities. Many priceless gifts were presented to us, and our baggage car, which had contained only our munitions and our old rags, gradually began to fill up. At the sidings, which were especially operated so as not to inconvenience us, large swarms of Bedouins gathered, raced along beside our cars and, whenever the train stopped, entertained us with trick riding. Many a good glass was drained in the family circles of the German residents.

Finally, at Aleppo, after 10 months of waiting, we received the first news from home. Letters from our loved ones and the Iron Cross—what more could be expected? We received two large

sacks of mail so that we passed the next few days in reading the letters from home, in studying over the many letters and tales sent forward to us, in sending signatures [evidently post cards] and in consuming the supplies of cigars, chocolate, etc., contained among our presents.

On Whitsunday, in the afternoon, our train arrived at the station at Haidar-Pascha, the last Asiatic station on this railroad. My men had received the long looked-for uniforms which had been sent out, and the officers were also able to fit themselves out in accordance with European "Kultur," to whose arms we were again returning.

The chief of the Mediterranean fleet and, at the same time, chief of the Turkish fleet, Admiral Souchon, could not be dissuaded from coming with his staff clear to Haidar-Pascha to meet us. My men formed hurriedly. Our flag, that would no longer wave over us for 10 more months, was on the right wing. A few short commands which were smartly obeyed showed that even months of a life of privateering could not stamp out their military bearing; then I lowered the tip of my sword before my superior:

"I respectfully report the return of the *Emden's* landing force consisting of five officers, seven petty officers and 37 men!"

ANOTHER "EMDEN" HERO RETURNS HOME[1]

THE ADVENTURES OF LIEUTENANT LAUTERBACH (NAVAL RESERVE) DURING THE PAST YEAR

Mr. Edward Lyell Fox, the noted American writer, whose book "Behind the Scenes in War-Ridden Germany" was of so much assistance in explaining our position to his countrymen, was granted the privilege of meeting Captain Lauterbach at the conclusion of his long journey, and to him he gave the following account, quoted verbatim, of his varied experiences:

"And so you would like to hear the story that escaped the reporters in San Francisco," began Captain Lauterbach, with a pleasant chuckle as a smile spread over his weather-beaten but still peculiarly young face. "Well, it was not as extraordinary as all that—you know, at that time when the

[1] TRANSLATOR'S NOTE.—While translating the foregoing adventures of Lieutenant von Mücke, I found the following article in the German press, "Der Tag" (The Day), of Berlin, dated October 17, 1915. In the hopes that it would be of interest in connection with the *Ayesha* yarn, the translation is appended herewith.

Emden put the finishing touches on a Russian and a French ship—I have still lived through other things. But as Captain von Mueller knew that the Australian cruiser *Sydney* was on his trail and that we would sooner or later come to blows with her, he told me that I could not take part in this next engagement. I had taken part in the last fight, he said, and therefore would now have to make a place for another. The captain of our accompanying collier had also made an urgent request to be permitted to be present during a fight. And so there was nothing else for me to say.

"At Keeling, with a boatswain's mate and a machinist, I had to shift over to the collier, whose captain was then transferred to the *Emden*. It was known that Captain von Mueller intended to send Lieutenant von Mücke ashore to destroy the radio and cable stations on one of the Keeling Islands. We were told to cruise in the neighborhood and wait for the *Emden*. In case she did not again appear, I was to open the sealed orders which had been given me. We hated to leave the *Emden* and could hardly take our eyes off her. We waited a day, then another, three, five, ten days, two weeks, but no signs of our *Emden*. Had something gone amiss? But—nonsense! Our *Emden*—nothing could happen to her. Some day we would see her smoke clouds on the horizon. And so four weeks passed. This uncertainty was unbearable, but the certainty, gradually becoming more apparent, that the *Emden* was destroyed, made the coldest blood boil in our veins. But, you know of course, that the *Emden* in her final fight filled the whole world with her fame. . . . .

"Our supply of provisions was almost exhausted and we had nothing but rice and potatoes to live on. It is indeed a hard task to actually believe that a loving friend has passed away! At the end of the fifth week there seemed no use in hoping for the return of our cruiser. I cannot express to you the deep sorrow with which we had to accept her loss. I opened the secret orders. They directed me to proceed to the neutral Dutch harbor of Padang on the east coast of Sumatra. Imagine our bad luck! Just 24 hours before our arrival, the North German Lloyd steamer *Choising* had left Padang and later took aboard at sea, from the *Ayesha*, Lieutenant von Mücke and his party. As you know, Captain von Mücke had, several days previously, entered Padang in the renowned *Ayesha*, which was later on destroyed when they shifted to the *Choising*. Of course, I did not know all this until a long time afterward. Here I lay before the high mountains of this silly country of Padang and knew not how to find my way through this channel, swarming with islands, into the harbor. My charts were of little help because the positions of the dangerous rocks, water now washing over them, were not marked. I did not trust to luck to get in the harbor, but took special precautions to keep inside the three-mile limit where an enemy ship could not attack me without violating Dutch neutrality. From out there I signalled for a pilot. And then a huge ship appeared, heading in. A Dutchman I thought. But she then hoisted the English colors and I could read the name on her side, *Empress of Japan*. She came smoking up—as big as a mountain in comparison with our small collier. 'Stop!' she signalled. Had I disobeyed the order, she would have rammed me. She lowered a boat and an officer

came aboard declaring me and my crew to be prisoners of war. My ship would be sunk.

"Before my eyes they sank the collier. My crew and I were taken as prisoners to Singapore. The natives of this island city were very friendly toward us. I had soon gained their confidence sufficiently to know that an attempt to escape would not miscarry. But I wanted to make preparations to take my crew with me when I fled. We then began to dig a tunnel under the wire fence that surrounded our prison-camp. We had scarcely completed our work when the famous revolution among the natives in Singapore broke out. The English blamed me for inciting the blacks against them. I herewith declare that this blame is founded on untruths. When the revolution had been settled, we completed our tunnel, and, during the following night, nine of us gained our freedom. We marched the entire night along the northwest coast. As we had $2000 among us, we were soon able to get hold of two Malayan rowboats which took us across the Straits to the Dutch Island. Here we found some more seafaring Malayans who were glad to take us for a cruise of several days further along the east coast of Sumatra. But even here, in spite of the hospitality of the natives, we could not linger long because we dared not violate the Dutch rules. After a long trip through blooming tobacco fields and coffee plantations, through shady woods of rubber trees and endless plains covered with ylang-ylang, we managed to get through the almost impenetrable forest of the marshy coast regions, and finally arrived at the green Sea of Sumatra, where Malay seamen again awaited us to carry us across to Java and Celebes.

"A fairly large boat had been lying on the beach of Celebes for the past seven months. It was an unreliable old thing that absorbed more water than a thirsty sailor could, even with his advantage of being able to drink more freely. But we took a chance and, in high spirits, stood out into the Sulu Sea. We had nothing to steer by except a pocket compass. During the night we consumed great quantities of matches trying to keep on the course. This was set for the Philippine Islands. How we managed to get safely over the Sulu Sea, God only knows! The boat danced like a nutshell on the heavy seas.

"Land! On the seventh day out of Celebes we sighted land. We certainly did learn to sympathize with old Columbus and his experiences in his day. It was Mindanao, the land of the black Moros, that now took us up as guests. Particularly the Americans living out there showed themselves to be very friendly. As our skins had peeled off and as we were burned to a dark brown, it was difficult to believe that we were really of European origin. Therefore we were considerably alarmed to hear the news that six Moros had gone "amuk" and were roaming the country, trying to kill off all the whites. It was later declared that they were last seen in the same direction in the jungles through which we would have to pass in order to reach the north coast. This was not a pleasant prospect inasmuch as we were armed with nothing but pocket knives. We kept watch day and night until we reached our goal where we expected to meet our small steamer. Of course, it was not there. We therefore set forth in

a small sailboat for the island of Cebu, and from there we finally reached Manila.

"Here I shipped aboard the Japanese steamer *Takachi Maru* for Tientsin. I told the grinning skipper that I was a Hollander. But he did not seem to trust my nationality and continually spoke to me in English. 'Cannot understand; only Dutch!' But this he did not understand. I was afraid of being recognized in Shanghai, as I had frequently entered that port as captain of a Hamburg-American liner, so I therefore cut off my beard and mustache. As quickly as possible I turned my back on Shanghai and, with two donkeys drawing my ancient Chinese wagon, proceeded into the interior where I was concealed by a friend. Eventually I heard that an American steamer, the *Mongolia*, would proceed from Shanghai to Japan. I therefore returned to Shanghai to make proper preparations. During the night on which the *Mongolia* was to sail I went aboard and reserved a cabin. Three days later, after no adventures, I landed in Japan. Unconcernedly and without molestation, I wandered around the country of our yellow enemies for eight days. Then I booked passage for America via Honolulu. And there on board I was recognized by a gentleman who had once upon a time been a passenger on one of my Hamburg ships.

"In sufficient time I heard that the reporters and photographers of San Francisco would be waiting for me. These were the very people whom I wished above all things to avoid. They did not catch me."

In regard to the last part of his trip, Captain Lauterbach had little to say. He merely requested Mr. Fox to warn his countrymen about the horrible proceedings going on in the dives disguised as whiskey stores along the New York water-front. A refugee these days must travel by devious paths if he wishes to arrive home safely and unrecognized.

Captain Lauterbach then wrote a postcard. I volunteered to mail the letter for him. "That is addressed to an acquaintance," he said, laughing up his sleeve. "He bet me two hundred pounds that I would never return home to Germany. He loses."

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

A COMBINED ARMY AND NAVY WAR COLLEGE

By Colonel Wm. W. Harts, U. S. Army

The rules for morality for the individual and for the state, although based on the same foundations, are not always equally applicable to both. It will probably be generally agreed, however, even by those who have not given any attention to the comparison between these two, that self-preservation is a primal and fundamental principle for both, with a difference that will be easily recognized. Self-preservation for the individual affects only himself; for the state it must include also the duty of protecting the higher interests of the many individuals composing the community, but more particularly must it include the right of development in the future along lines that will insure for itself the greatest stability and for its citizens the best opportunity for a continued happy and prosperous existence.

This national duty of protecting this right of development has in the past led to many wars between peoples, resulting from their conflicting lines of interest. We notice recent examples in the Balkan War, the Russo-Japanese War, the South African War, and particularly in the present European War. It has recently given rise to strained relations between this government and Japan over both the land and school questions in California, and a few years ago between the United States and England over the Venezuelan boundary. It seems probable that if this country should ever be forced into a war it would be with another nation over some such clash of vital interests, for internal causes of war between sections or classes are at present so remote that any serious civil war such as that of 1861, for example, seems now quite impossible.

The deduction is thus obvious, that the only war that we can anticipate as even reasonably possible is one with another nation. Our peculiar geographical separation from the other nations of

the world by wide expanse of ocean makes such a war one in which both our army and navy must inevitably be engaged. These two services are not, properly speaking, independent forces, notwithstanding the wide difference in their mode of operating, but are merely two different forms of the military power of the nation. They are alike in organization, discipline, and purpose, but differ in training and functions. Each is strengthened immeasurably by the loyal cooperation of the other in times of action, and for this reason such cooperation is an end particularly to be sought.

In all armies and navies the principal object of peace training is the thorough education of the individual in his duties in war and an understanding of the confidence he may place on the support of his comrades in arms. This principle extends from the lowest individual up to the largest units of command. Upon the degree of perfection of the habits instilled by this training the conduct of the nation's forces under the supreme test of battle may be reasonably predicted. Such inter-reliance in performing its functions is, after all, the very essence of every organization, whatever its character. It is indispensable in the military service, where compactness and mobility are of utmost importance and often a deciding feature. This principle of cooperation is now well understood in the training of the component parts of both the army and the navy of this country; but we will look in vain if we search for any authoritative means of enforcing the enormously important principle of unity of command between the army and navy themselves. It rests now only on the loyalty and devotion to the country's needs of the officers in separate command, and is open at any time to impairment should a case arise where high command should fall on an over ambitious or negligent officer, or even on one lukewarm in the eagerness with which he performs his duties.

That this may be a very slight thread in a crisis can be shown by several historical instances in which this reliance has failed, and in consequence the opportunity has been lost to bring about those positive results which an expectant nation has a right to look forward to in time of war. While it is true that the fate of the nation is not in the balance in every battle, it may be easily understood that the whole strength of the nation's forces there engaged must be available, and any failure of one part to support another, which could be traced to faulty organization, would

undoubtedly be called a defect that would require prompt correction. In both the army and the navy the methods of exerting their utmost force in battle is being given the earnest and incessant attention of the best intellect in these branches, and the reports from observers in each new war are carefully scanned to see whether they show weaknesses of organization or material that must be eradicated, or whether they point out better and newer methods or more efficient weapons that will give the nation possessing them an advantage over its adversary.

We can plainly trace an evolution in the war organization of our armies due to these compelling causes, and we can still more easily observe the enormous change in battleships within recent years. While all these progressive modifications are being made within the two separate services no corresponding steps are being taken so to coordinate the two main branches of the military forces of the country that combined operations may be put beyond the possibility of failure arising from lack of trained mutual support.

Under the Constitution, the President is commander-in-chief of both army and navy, and thus constitutes the theoretical unity of command necessary to single military control; but under our present custom his command is invariably exercised through the Secretary of War and the Secretary of the Navy, at once a division of authority, the defects of which can only be obviated by some sort of single military control. It would be unquestionably too much to expect the President, in the midst of the pressure of his diplomatic duties, his administrative functions, and his political requirements at such an exciting time, to make his own plans for a military campaign, even if he felt disposed to engage in such a technical class of work. It might be said that he could appoint a board of military men familiar with the situation who would act as his advisers. In such a case the President would solve only a portion of this difficulty, for the orders putting the plan into execution would still need to be issued through the heads of the two departments. In the possible case of any failure to carry out such orders as were intended, arising through misunderstanding or jealousy, there would be no one with power to set the matter straight, particularly in the by no means impossible case where the two department heads themselves might not be on an entirely cordial footing.

It thus happens that we have found in the past that the army plans and the navy plans have been correlated mainly through a common loyalty to the same cause and a patriotic desire to serve the country for which they were fighting. This has generally worked well, but not always. During the Civil War there was comparatively small opportunity for cooperation, for there were so few combined operations. Early in the war there was much lost effort on the Mississippi until the navy stationed in those waters was put under the orders of General Grant. Later we see at Fort Fisher another example of lack of mutual assistance in the attack on that fortress. In the Spanish War, within our own memories, we recall the lack of cordial cooperation between General Shafter and Admiral Sampson, which certainly did not contribute to the success of the expedition. Cannot this cooperation, so highly desirable, be secured in a simpler and surer way? Cannot the officers of the two branches be so trained together that the habit of interdependence and mutual reliance will be so confirmed during peace that during war none of these conflicts of authority need arise?

Among many methods of accomplishing this end a simple and elementary step would be to have the two war colleges combined. The Army War College is now situated at the post of Washington Barracks. It contains enough library room and map space to serve both colleges for a great many years. It contains lecture rooms and administration offices which would be ample for all combined purposes for a long time in the future. Although it is not large enough alone for all purposes of both war colleges, it could be very easily supplemented by two additional buildings for those separate functions and distinctive forms of instruction not common to both services. All of the necessities of each war college could then be met and the central combined college be left for those common purposes which are not now served efficiently.

Is it not therefore a reasonable suggestion that the present Army War College building be used for the combined war college, and that new buildings be added, one on each side, and properly joined with it by a suitable architectural connection, these to be occupied, respectively, by the Army General Staff and the Navy General Staff, with the war colleges of the two arms of the service.

The present Naval War College at Newport will have to be abandoned sooner or later, and perhaps turned over to the Naval

Training Station, which might prove to be a very useful exchange. In this event, all the books, charts, and equipment should be brought to Washington for use in the new building. It is admitted by many naval officers that Newport is a very unfortunate place for a naval war college, although it seems ideal for certain other naval purposes. By making the course for both army and navy of equal length a community of interest and unity of purpose could be included in the doctrine of both schools, so that a national and united policy could be emphasized.

As the navy grows the needs of the Naval Training Station will require all of the facilities at the Newport station, including the buildings and grounds of the present war college; and as the army grows the present Army War College will likewise be found not to meet all the requirements of an enlarged general staff. Both of these developments can be met in an ideal way by an enlarged and combined army and navy war college. The space at the Washington Barracks site is ample for both, the location is admirable, near enough to the center of Washington for convenience, and far enough away to avoid needless interruption. Furthermore, the value of combined instruction cannot be overestimated. The higher education of officers for superior command can in no other way be so simply and satisfactorily coordinated with such beneficial results to the defense of the nation.

The question of economy of instruction is purposely omitted in this article—the avoidance of duplication of work, the desirable concentration of all those sources of information which are alike valuable to both services. It has seemed that the inculcation of a common war doctrine for both services was of such paramount importance as to be reason enough in itself for a change which, though it may seem radical at first, still is so logical as to appeal strongly to the practical man.

DISCUSSION

Rear Admiral Austin M. Knight, U. S. Navy, President U. S. Naval War College.—The proposal to transfer the Naval War College from Newport to Washington is not a new one. It has come up frequently in the past and will doubtless continue to come up in the future. The argument of Colonel Harts is one of many interesting and impressive arguments that have been advanced in its support. Taken together, the arguments can hardly fail to be convincing if we accept the view upon which they are based as to the true mission of the war college. This view appears to be

that the college has, or should have, a share in the administrative activities which are the ultimate expression of the principles which it aims to develop and to teach.

In my opinion this is a mistaken conception of the mission of the college, and one which has a tendency to obscure the true mission and to destroy the unity of purpose with which the mission should be pursued.

As I see the mission of the college, it is, to educate officers in the art of war and to train them for war command.

Its output is an output not of plans for war, but of officers fitted to prepare such plans. It has properly no part in the administrative work of a general staff, a division of operations, or a general board. It aims to prepare officers for the work of these organizations, but not to share in their work itself, except through its graduates.

I do not know that I can do better at this point than to quote a few paragraphs from an address which I delivered to the graduating class of the college a few months ago:

"Closely connected with the question of enlarging our present buildings is the question whether the college is to remain here or go to Washington, where it would be in close touch with the department, the General Board, and the Army War College. I have steadily opposed this plan for the very reasons which have seemed to its advocates a conclusive argument for its adoption.

"I cannot think of the war college as benefiting by close association with so many activities so widely different in character from itself and from each other. It is easy, of course, to picture an institution differing entirely from the one that we are developing here. The Army War College is such an institution. Its work covers a wider field than ours and covers it, I am sure, very successfully. It is a part of the General Staff and includes within itself several important subdivisions of the staff; as for example, the map-making and plan-making sections and the division of intelligence. It is not clear to me that there is any inherent justification for associating these branches of general staff work with a war college. I think, on the contrary, that the tendency of such association must be to draw off attention from the function that I insist upon as the primary and almost the only function of a war college as such—the development of principles and the instruction of officers in the application of these principles to practical situations.

"The war college is already in what seems to me its proper relation to the department and the General Board in that it trains officers for duty on the General Board and in the division of operations, just as it trains officers for the fleet. To give it the added function of taking part in the work of these organizations would be hardly less a mistake than to give it a part in the operations of the fleet.

"The question is, then, do we want a war college, or do we want an institution which is at once a war college, an office of intelligence, and a map-making and plan-making branch of the General Board? The more I see of the college as it exists here, and of the lines along which it is developing, the more strongly I feel that the unity of purpose which marks its present character is one of its most indispensable characteristics.

"In the matter of location, I feel that we are fortunate, and in saying this I do not forget the many inconveniences connected with residence in Newport, where houses are not always obtainable and rents and other expenses are always high. These and other inconveniences sink into insignificance in my mind when considered in connection with our freedom from the social and official distractions by which we would be surrounded in Washington. We have here our own 'atmosphere' and an atmosphere essentially reflective.

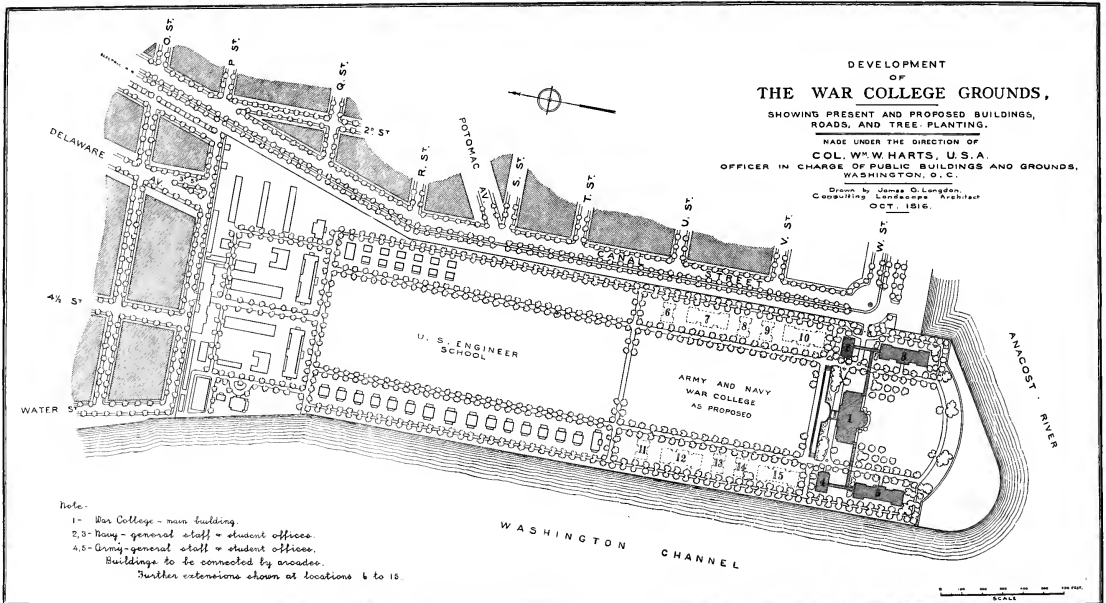
"A factor of even greater significance is *the intimate contact with the fleet during the summer months*, which is made possible by our situation upon this magnificent sheet of deep and sheltered water—the natural and almost inevitable rendezvous of the fleet during the summer. However much importance may be attached to the association of the war college with the department, the General Board, and the Army War College, the association with the fleet is enormously more important.

"Not only have we much to learn from the fleet and the fleet from us, but, quite apart from the material gain to be anticipated from an interchange of experience, is the sense of comradeship which cannot fail to come from intimate association repeated year after year between the officers of the college and those of the fleet. If there should ever come a time when the college was disposed to emphasize unduly the theoretical side of its mission, there could be no better antidote for the tendency than would be found in the influence of the fleet. No one, I think, could claim any such effect as this for the influences that would surround the college in Washington. I do not say, and I do not believe, that the influences there would be narrowing. But I certainly see no reason to believe that they would be broadening, as I believe that frequent contact with the fleet is sure to be.

"A still further argument in favor of Newport as compared with Washington is connected with the matter of climate. Here the physical and mental faculties are stimulated 365 days in the year. In Washington they are more or less paralyzed through the three or four months of a hot and very depressing summer."

No one can question the importance of cooperation between the army and navy. The Naval War College believes in this whole-heartedly and preaches it in season and out of season. It may safely be asserted that no graduate goes out from the college without a sound indoctrination on this subject.

But to believe in a doctrine and to teach it is one thing; to take part in an administrative effort to make the doctrine effective is another. The first of these is the function of the college; the second is the function of the graduates of the college.


DEVELOPMENT
OF
THE WAR COLLEGE GROUNDS,
SHOWING PRESENT AND PROPOSED BUILDINGS, ROADS, AND TREE-PLANTING.
MADE UNDER THE DIRECTION OF
COL. Wm. W. HARTS, U.S.A.
OFFICER IN CHARGE OF PUBLIC BUILDINGS AND GROUNDS, WASHINGTON, D.C.
Drawn by James G. Langdon, Consulting Landscape Architect
OCT. 1916.
O St.
P St.
Q St.
R St.
S St.
T St.
U St.
V St.
W St.
2nd St.
4½ St.
DELAWARE AV.
POTOMAC AV.
B. & O. R.R.
CANAL
U. S. ENGINEER SCHOOL
ARMY AND NAVY WAR COLLEGE AS PROPOSED
WATER ST.
ANACOSTIA RIVER
WASHINGTON CHANNEL
Note -
1 - War College - main building.
2, 3 - Navy - general staff + student offices.
4, 5 - Army - general staff + student offices.
Buildings to be connected by arcades.
Further extensions shown at locations 6 to 15.
SCALE

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

A PLEA FOR UNIVERSAL SERVICE

By Lieut. Commander John P. Jackson, U. S. Navy

In approaching a subject of the nature of the one about to be considered, so entirely foreign to our national traditions, it is first of all necessary to demonstrate that a country like the United States really does need a large army to insure its security against aggression. Then we may take up the discussion as to the best means of raising this army. It is purposed therefore in this article to show: first, why we need a large army, or rather a trained force which can be formed at short notice into an army; second, why our present system is totally inadequate to our needs; third, why the best way of acquiring such a trained force is universal service; and fourth, aside from any military reasons, what great advantages to the individual and to the race universal service would be.

Why do we need a large trained military force? Has not the nation been taught to believe that the navy is its great bulwark of defense? Unfortunately too many of our countrymen have blind confidence in the navy's ability to keep the foreign invader from our shores. But is this confidence justified? Let us consider a few facts and investigate the conditions under which the navy is supposed to accomplish this stupendous task. It is a military axiom that strategy never changes. Tactics change, weapons and methods of using them change, but the great principles of strategy never vary. One of the fundamental principles of strategy is that, other things being equal, the side which brings the greater force to bear at the decisive point wins. The theory of concentration has always been employed by the great military geniuses of the world. Mahan first demonstrated its equal applicability to the distribution of naval forces. His writings produced instant effect. Previous to the publication of his works the great naval powers had their fleets scattered all over the world. Each

trained men available. The computation was made before England had increased her army to its present size. Her available tonnage is almost unlimited, and at the present time it is safe to say that she could land more men than Germany in the same 15 days.

Hence, with our fleet defeated or bottled up and the enemy commanding the sea, no miracle can prevent the arrival upon our coast of an army of invasion of several hundred thousand highly disciplined troops. We are faced with the problem of preventing the landing of this force, or of affecting its annihilation before it can be reinforced within a month by an expedition equal to the first. What have we with which to accomplish this? The dream of 1,000,000 men springing to arms overnight is so absurd, and has been so ridiculed by authoritative writers that even the public, unversed in military matters, must realize the utter folly of such a suggestion. Nothing, of course, can be accomplished without organization, training, and material in abundance, represented by years of careful preparation and unremitting effort. The conclusion is obvious. In default of a navy superior to any possible enemy, we must have an army, and not a small one at that, nor an untrained one.

Our present army consists of about 100,000 men. If an army is necessary at all, such a small one would be totally inadequate for the prosecution of a great war. It would constitute a mere nucleus of what we would need, if it was not wiped out in the first brush with the enemy, as was England's in the opening days of the present war. We must have many more men—four or five times as many to start with as the regular army now numbers. Where are they to come from? What reserves have we? Even if we did not have trouble in obtaining recruits, but a million volunteers came forward at the outbreak of war, they would be little better than useless. The day has passed when personal courage and determination alone can win against discipline and organization. Our recruits would have to be put in training camps for six or eight months, and by that time there might be no need for them. Heretofore our country, in the few and small foreign wars it has been called upon to fight, has found a voluntary system ample to meet the emergency. The Civil War was different, but was fought amongst ourselves, with each side equally unprepared; and it was two years before either army was brought to a state of efficiency. What would have been the result if we had been engaged with a first-class military power?

The only organized bodies of men we have to supplement the regular army are the state militias—a scant hundred thousand of them; and by European standards they can in no sense be called trained or seasoned troops. Men join the militia as a sort of club and for social reasons; not to become soldiers. It is composed of all classes of men, mostly unversed in military matters—too busy to make a serious study of them, and unable to spare the time for even rudimentary training. A few perfunctory drills a year, maybe a week in camp, and a certain amount of practice on the rifle range, is the extent of their training. They learn none of the real business of a soldier. Furthermore, under the system of electing officers, discipline is at a low ebb. An officer who depends upon his popularity for his commission can exert no real control over his men, nor command proper respect from those who know he is no better fitted by knowledge and experience to be an officer than they are.

The mobilization of the militia for duty on the Mexican border has shown up a bad condition of affairs, and yet nothing for which the personnel of a militia can be blamed under the system. They had not sufficient training for active service. They were mustered in and sent to do work with which they were entirely unfamiliar. Men who know nothing about the care of horses cannot be blamed if the horses die. Officers who do not know that men must be seasoned and acclimated before they can be sent out on long hikes under semi-tropical suns cannot be blamed if half their commands falls ill. Nor can those charged with the care of material be held to account if it deteriorates and becomes worthless. Officers cannot instruct men in something they do not know themselves. The only wonder is that the militia were able to exist at all under such conditions, or that there was any sort of morale or subordination left in the ranks after the first week.

By far the most crying need is, of course, for competent officers who have mastered the profession of a soldier and know how to command men. These are not created by merely putting on shoulder straps. It cannot be expected that a man straight from a bookkeeper's stool or a broker's office, however patriotic, can attain overnight what others have gained in a life profession. It seems hardly necessary to dwell upon these platitudes, and yet there exists a persistent belief that anyone can become a soldier by putting on a uniform and shouldering a gun. The naval profession is not troubled by such aspirants.

If the mobilization of the militia has taught us anything, if England's experience has not been wasted upon us, it is very plain that we must train our men *before* they are needed—plenty of time before—and perfect their organization. We cannot depend upon an army of 100,000 men; and a reserve of 100,000 militia is far too small, even if it were highly trained. We cannot seriously contemplate throwing a mob of green volunteers, hastily gotten together at the outbreak of war, against the machine guns and bayonets of disciplined troops. We *must* provide an efficient reserve for our regular army. We must decide upon the best method of raising this reserve and then give it the very best possible preparation. No halfway measures should be tolerated. They are worse than useless, and very dangerous in that they delude the country into thinking that there is a reliable defense, when in fact none exists. No scheme which contemplates a month's training a year can possibly accomplish anything—not even the preliminary seasoning of the men. War is the most complicated science of modern times, involving as it does the employment of practically every other science. One had much better attempt to turn out dependable locomotive engineers or able seamen by a month's training.

To one unfamiliar with the conditions existing in a modern army the amount of thorough instruction which must be given to the individual soldier is astonishing. Trench warfare and the development of all kinds of special weapons used in its prosecution have introduced untold complications and rendered all previously existing manuals of tactics obsolete. For instance, voluminous instructions have been written upon the tactics of the hand grenade alone, and the men are given as complete and assiduous training in its use as they are in that of the rifle. Again, every different type of trench—fire-trench, communication trench, parallels, saps, and half a dozen others, are constructed according to certain rules and fixed dimensions which must be known to every soldier. They are laid out according to definite systems. The methods of communication by telephone and signal, the manner of getting food to the first line troops, of bringing up ammunition and distributing it, are things in which the troops must be well instructed. The mere routine operation of relieving the men in the first line is one which must be carefully worked out, to avoid losses by hostile fire, congestion in the narrow communication trenches, and

to prevent whole detachments getting lost in the maze of passage-ways. Many instances of such things happened in the early days of the present war.

When it comes to the really complicated problems of planning an assault—the preparation of the terrain, the proper distribution of the storming troops, the timing of the successive waves of reinforcements, the cooperation of the artillery—detailed instruction must be given and repeated rehearsals held to prevent certain disaster. This is only to mention a few of the most obvious elements of a soldier's training which have been learned by actual experience and at great cost in the armies of Europe. How can we hope to impart the least smattering of it to raw recruits in one month's training a year? We must not forget that all foreign armies are learning this, even the neutral ones, from a close study of the actual operations. If we fail to do so while we have time, we cannot hope to put up any sort of resistance against troops well versed in the latest practices. Consistent work extending over a considerable and continuous period of time is necessary to even make a start in the right direction, and we must train the number of men we will need at the opening of hostilities. If our present system is inadequate and cannot produce results, one must be found which will do so. In this article we are not concerned with organization, development of resources, accumulation of munitions and equipment, and the infinite number of things which must be accomplished before successful mobilization can take place. These belong properly in a treatise on preparedness. What we are alone concerned with is the providing of the man power.

There are four general methods by which an army can be raised: (1) The voluntary system, (2) partial conscription, (3) general conscription, and (4) universal service with a short term of intensive training. Of the great powers, England, until recently, and America represented the voluntary system; Russia and Italy partial conscription; and France and Germany general conscription. Switzerland represents universal training. Which method has proved the most effective?

Nothing is clearer than that the voluntary system failed completely in England, the only nation involved in the present struggle which employed it, and had to be abandoned in favor of general conscription. And so it will fail in every case where a nation is compelled to put forth its utmost effort. England, at least,

had a navy of preponderant strength to hold back the enemy while she trained her new armies. How England has had cause to regret her voluntary system and how speedily she was obliged to renounce it in a great emergency must be evident. The result of her system made her difficulties ten times greater when she tried to raise armies by other methods. It took England two years of strenuous effort to raise her new armies. What would have happened to France in such a predicament? Or to England herself without her fleet to guarantee her the time she needed? Our difficulties will assuredly be as great as England's; and what is fatal to us is that we have not the necessary fleet to hold back the enemy while we are making our preparations on shore.

Washington more than once bitterly complained of the voluntary system, upon which he had to depend to raise his ragged armies. In the first burst of patriotism and resentment against aggression, carried away by excitement and enthusiasm, volunteers may flock to the colors. But their ardor is soon cooled by discipline to which they are not accustomed, and the hardships of an active campaign. They seize the first opportunity to withdraw from the unpleasant situation into which their impetuosity thrust them. In our American Revolution we are told that men who volunteered for short terms of service left the colors upon the expiration of their enlistments, sometimes upon the very eve of battle. In the Civil War, after the first few months, volunteers no longer rushed forward to fill the gaps in the ranks. Before the battle of Gettysburg many of the state regiments had been reduced to the size of a modern European company, because volunteers were not forthcoming to keep them up to strength. Can a nation the size, power and wealth of ours depend upon such an uncertain system for its defense, when even now the War Department is experiencing great difficulty in recruiting our present small army to the modest size allowed by the last military appropriation bill? In all probability, to secure the increase granted by Congress, the inducements will have to be made particularly alluring and the pay of the soldier so increased that it will be found to be an expensive proceeding. In other words, the maximum expenditure for the minimum result. And even then we would not secure what is needed.

There is, moreover, in the voluntary system of service an element of great unfairness. The high spirited, courageous, and patriotic sacrifice comfort, personal interests, and many of them their lives;

while the selfish, timid and cowardly are permitted to shirk their duty. Military service is an obligation as incumbent upon one man as another, and when the need arises no one should be permitted to avoid it. It is the unfairness upon which this entire system is founded which makes it so unacceptable, placing upon the few the burden which should be borne by all. The nation should not take advantage of its patriotic citizens alone, but compel the slacker to do his share.

The second method—partial conscription—was adopted by Italy because she could not afford to support the financial burden of a standing army such as was maintained by France and Germany. She trained as great a part of her available material as her finances permitted. It was not her choice, but her necessity, which forced her to adopt partial conscription. Austria's case was similar. In the case of Russia, her population was so tremendous that there was no need of training everybody. The expense would have been enormous, and a further consideration made itself felt in the matter of equipment, which was limited. She therefore trained enough men to insure her an army larger than Germany's. The best that can be said for partial conscription is that it is an expedient resorted to by nations which, for one reason or another, cannot or do not wish to support general conscription. It involves the same element of unfairness as exists in voluntary service, and in a more exaggerated form, since, at least, under that system the individual is willing. It possesses the advantage, however, over the voluntary system of being independent of the caprice of the individual in securing an army of any desired size.

General conscription is, from the point of view of the seeker after efficiency, the only logical way to develop the full strength of the nation. He reasons that it is absurd to leave to the whim of the individual whether he will undergo military training or not. Every male must be brought up in the knowledge that he owes his services to the state, and that this takes precedence over even family ties. He should not escape military service except by reason of physical unfitness. This obligation is so thoroughly ingrained into the people of France and Germany that their tour of military service is performed as naturally as the ordinary occupations by which they earn their daily bread. When military service becomes as much a part of the life of a nation as this, three-fourths of its supposed hardships disappear. It is counted on, and the nation regulates its life accordingly.

Only in nations where this system does not exist and has not become a part of the life of its people, is military service regarded as an irksome and unwarranted exaction on the part of the government, and an infringement upon the liberty of the individual. Such is tradition and custom! The people of nations who do not live under the constant threat of invasion by aggressive neighbors do not see the necessity of military service nor admit the obligation to serve. Those who do, can see the need and accept it without protest. But conditions change; science and invention bridge space, and nations which were once remote from the turmoil of the world's battlefields suddenly find themselves within the reach of vast hostile armaments. Then must the traditions of the people readjust themselves to the conditions.

The people of our country are ignorant of military science. By nature peace loving and undesirous of aggrandizement by foreign conquest, they cannot be convinced that other nations may cherish sinister designs and policies which may at any time embroil us in war—perhaps of national existence, such as is raging in Europe. Unfamiliar, also, with world politics, they do not realize that we ourselves have certain foreign policies which are in direct conflict with the interests of the most powerful nations in the world. They are sure to be challenged sooner or later, and may prove to be a convenient pretext for a declaration of war at a moment favorable to an enemy. These policies must be renounced or we must make ourselves strong enough to fight for them. To cling to them without power to back them up means disaster. To renounce them through fear or weakness, on the other hand, means loss of prestige and humiliation. If then we hope to preserve our national honor and the respect of the world, to say nothing of our independence, the public must be convinced of the need of strong naval and military establishments, and of the revival of the obligation of military service which every individual owes to the state to which he has sworn allegiance.

It cannot be denied that we have a pretty large contract before us in convincing the public of the necessity of universal service, and in demonstrating the advantages which would accrue from the system. Ours is a government by the people, in which the will of the people is law. No steps can be taken toward military efficiency and an adequate defense unless the people wish it.. The government can no more adopt compulsory military service or

ram preparedness down the throats of the people than it can make laws abrogating freedom of speech or forbidding religious worship. With our traditions and temperament it will be no easy matter to persuade our people that our theories regarding armament are quite obsolete. The old bugaboo that a large standing army is a menace to freedom can probably be quite easily disposed of. What will be difficult to overcome will be the natural inertia of public opinion, and the disinclination to depart from long established tradition. Only a systematic campaign of education conducted by organized patriotic societies through lectures, circulars and pamphlets which will reach the masses, can succeed. When the people demand national defense the necessary legislation will not be long in coming.

Will it take a severe jolt such as a foreign war to arouse us and shake antiquated notions out of our heads? The opinion is often heard expressed that what this country needs is a good licking. But do those who so lightly talk in this manner stop to think what a good licking means when administered under modern conditions? It might lead to the ruin of the nation, as it will to more than one of those engaged in the present war. At the least it will mean reduction to impotence and poverty for a generation. And then we will only come back, if it is in us to do so, by adopting the measures which would have prevented the ruin if taken now. We who are alive will not have the satisfaction of seeing the result.

General conscription and universal service may very properly be considered almost synonymous terms. For the purpose of this article a distinction will be drawn between them. General conscription as it is practiced in Europe consists in every physically fit male citizen serving one regular enlistment in the army or navy. With our non-militaristic ideas it is doubtful if such a system could ever be adopted, and there is really no need for it. What we do want is a system under which every man will receive sufficient training to make him a dependable soldier in time of need. The points of difference between such a system and general conscription may be stated as follows: Under the latter every individual is mustered into the regular army, and becomes a professional soldier. He is liable for all active service for which the army is called upon. Universal service, on the other hand, can mean something quite different. The recruit need not be enlisted

in the regular army, or subject to its peace time duties, except in great emergencies. The regular army must be large enough to perform these. The recruit may be allowed to take the military training at any time he desires between the ages of eighteen and twenty-five. Thus men will not be taken away from civil vocations nor will courses at the universities be interrupted. The college man can take his training after graduation; others whenever it is convenient, after finishing school and before starting to earn a living. In fact, for these the training would to some extent take the place of a college course.

The recruits, after organization into companies, battalions and regiments, should be assembled in as large units as practicable for such period of intensive training as is decided upon—say one year. They should be placed under army discipline, live under canvas, and be put through a complete course of instruction and drill in all that concerns a solider, under the supervision of regular army officers. Toward the close of the period of training the entire force should be assembled for grand maneuvers such as were formerly held in the continental armies of Europe. Mobilization should take place on different frontiers in different years. The general object is the coordination of separate units and the gaining of practical experience in mobilization. The special object is the training of the officers in handling large bodies of men, in coordinating the method of employment of the different arms of the service, in gaining experience in supplying a great army in the field, and, in general, the study of the science of war, transportation, and logistics, under actual conditions.

There is no other way in which the general staff and officers in command in the field—the brain and directing power of the army—can gain this valuable experience. How can a general who has never seen more than 10,000 troops assembled be expected to handle forty or fifty times that number, as he would have to do in war? And how can a general staff work out the infinite details of transportation, supply and communication without some sort of actual trial? In every other sort of enterprise instruments are tried out in advance and organizations put to the test before they are applied to the uses for which they are intended. And yet this most complicated of instruments and organizations—an army—we propose to put into use without trial of any sort. In fact, we do not propose to create the instrument until it is time to use it.

It is like constructing an enormous gun, infinitely larger than any in use, and sending it out without test. Real progress and development cannot be made in enormous bounds. Ships and guns have *gradually* reached their present size. Fifteen years ago we would not have thought of building a ship of 30,000 tons and arming it with 18-inch guns. No nation except Germany, after years of experiment and slow development, can even now construct a Zeppelin. Yet if we had a war we would have to increase our army from its present size to perhaps a million men at one stroke. Hence the need of developing in time of peace a force somewhat approximating what we would need in time of war and of learning how we propose to handle it. It would be one thing for an enemy to know that after acquiring command of the sea we possessed no organized force to oppose his landing troops, and quite another if he knew that he would be faced by a nation in arms. In the latter case he would hestitate long before starting something he might not be able to finish. It is thus that a large army would prove our best guarantee of peace.

In connection with universal service it would be necessary to establish schools for officers. Soldiers can be trained comparatively quickly compared with officers, but a very great number of the latter are required. That has been England's greatest want and most serious difficulty in raising her new levies. The men were ready, but there were no officers judged competent to lead them under fire. After the war, this will probably be found to have been the chief factor of the great delay in launching her long awaited offensive. The mortality amongst officers has been enormous in all the armies—apparently far beyond what was expected—and it has not been possible to make up the losses anything like quickly enough. Without brains and leadership the war machine is impotent. We need a large number of trained officers as a nucleus for a fighting force, even if we do not train a single man. As it is impossible to produce officers in the year's service required for soldiers, the necessary number of the most promising men who have undergone the regular training should be selected and sent to officers' schools, where they would learn the technic and the theory upon which the practical side of war is based.

The great difficulty experienced by those who have thus far attempted to arouse enthusiasm in a preparedness movement has

been in convincing any particular individual that he should give up his time while his neighbor remains at home. The only logic in the matter seems to be that one rule should apply to all. The laboring class must not feel that it is enlisting to fight the battles of the rich, while the son of the banker and corporation president is immune. The French army knows no social distinctions, and no rank except what is attained by merit and courage. It is commanded by generals of peasant extraction as well as those of aristocratic birth. Many a titled descendant of old noble families is serving as an ordinary "poilu," in some cases under the authority of their former servants.

If the poor man of this country realized that in performing military service he would be doing what everyone was required to do, and that he would stand shoulder to shoulder in the ranks with the sons of the rich, in a service where advancement could only be secured by merit, what a spirit would be created and what a welding of classes in defense of the common fatherland! In times of national emergency it is the educated classes who respond to the call to arms almost to a man. Noblesse oblige. It happened in England at the outbreak of the present war. The lower classes hung back and compelled her to adopt conscription. If we could learn a lesson from England's experience, we would not wait until war broke out and then sacrifice the flower of the land. Example is a potent factor, and the less educated instinctively look to their superiors for guidance. But the influence of example would be more felt in time of peace, when there would be time for it to produce its effect, than in the confusion of a sudden call. Let us then make use of this fine spirit of the upper class which would only be wasted if we wait until war comes.

Aside from the military necessity of possessing a dependable reserve, the benefits of military training and discipline of the camp to our youths would be very great. There is no use in closing our eyes to the fact that physically the American youth does not compare favorably with the average youth of countries where compulsory military service exists. The average youth is not the college boy or the graduate of Annapolis and West Point. We are apt to consider them as representatives of the entire youth of the country, but this is far from being so. The college athlete, the midshipman and the West Pointer are physically the pick of the nation—the best we have, and not at all the average.

The countless thousands who know no university training; who do not know what proper physical exercise is, and have not the faintest idea how to develop their chests and harden their muscles, compose the average youth of the land. These, who far outnumber college bred men, are the bookkeepers, the clerks, shopkeepers, the factory hands, and the laboring and farming classes. Although the lives of the latter are physically more active than the others, their exercise is not of such a systematic and well directed kind as to develop healthy physiques. As a matter of fact, it has been stated that the city bred man in our Civil War made a better soldier and was better able to stand the long marches and hardships of active service than the over-fed country boy. But it was only after months of systematic military exercise that either type was converted into the seasoned soldier.

Our scientists have declared that the American is below par physically, and in direct contrast with the well-developed German soldier; that most men and women of forty have ill-health of some sort. Out of one thousand men picked from workmen of a well-known factory, fewer than one per cent were normal, more than sixty per cent showed signs of chronic organic disorders, and ninety per cent had no conception that there was anything the matter with them. Wrong habits of eating are said to account for six hundred thousand preventable deaths a year in the United States. Unless this condition of affairs is checked it means the decay of the American nation. It would be hard to devise a better means of checking this decay than by universal service, in which special attention was paid to the health of the recruit. This could be made an essential part of the system. Besides our trained corps of army surgeons, the most eminent members of the civilian medical profession could be called upon to cooperate in this great work; and the entire youth of our country could be taught sane methods of living and acquire proper habits of eating and taking care of their physical beings.

The American character has also deteriorated in the last generation. We have lost the stamina and rugged vigor for which the founders of this republic were famed. Decades of peace and immunity from the hardships of war have weakened the spirit and softened the fiber of the American people. Years of prosperity have sapped their virility in the same manner as that of the ancient Romans. As the English were contemptuously

termed by Napoleon a nation of shopkeepers, so may we be aptly called a nation of business men, and seekers after wealth, ease, and pleasure. We have forgotten the ideals of our ancestors, who fought and bled for the blessings of freedom. They appreciated the value of that for which their great sacrifices were made, and were ever ready to fight in its defense. Our generation, born under these blessings, accept them as matters of course, and as the normal state of affairs. We do not know the conditions under which the oppressed peoples of half the world live, and on account of which immigrants flock to our shores by the million. There is no disposition, as of old, to fight for ideals.

What a benefit it would be to the individual and to the stock of the race if the manhood of the country was brought up to a higher level of physical and moral fitness! Once taught proper methods and having experienced the benefits or regular life and systematic exercise, our men in the majority of cases would continue to apply what they had learned and keep themselves fit. It would constitute a veritable revitalizing of the nation. The discipline and regularity of a soldier's life engendered by universal training would make for better citizenship and stronger and finer manhood. Every recruit would go forth better fitted for the vocations of civil life, and better able to take his place in the civil community as a public spirited and valuable citizen.

Universal service would teach and inspire patriotism, which, alas! seems to be much needed in this country of ours with its diversified individual and selfish interests. The recruit would be taught what this great country is; what are its aims, and what should be its destiny. He would be brought into closer relation to the state; he would learn the meaning of national honor and the power of a great nation to protect its citizens wherever they may be. His whole outlook would be broadened, and he would realize that there was something more in the life of a nation than his own restricted viewpoint formerly indicated. He would take pride in his privilege to serve in the armed forces of his country; would desire to see her great, powerful and respected; and through the remainder of his life would take more intelligent interest in her policies and foreign relations, and do his part to see that she was wisely ruled by the best and most capable men.

While the horrors of war are so terrific, and the sorrow, suffering, destruction and waste are so incalculable, in these days of

scientific genius and mighty resources, that no man in his right mind can desire it; yet there can be no doubt of the invigorating effect of war. The heroic devotion of the French people, a race which the Germans believed to be decadent, which has commanded the admiration of the world, was brought out by this most terrible of wars. It is not conceivable that anything else could have produced the same result; but that France eventually would have lapsed into that decadence which Germany believed was already upon her. The views that Bernhardi and other German military writers proclaimed, that war is the great revitalizer of the human race, must be admitted to contain a great deal of soundness. Cannot the beneficial effects of war be realized without its attendant horrors? Just as peace maneuvers are executed by our naval and military forces to simulate the conditions of war without bloodshed; so there should be some substitute for war to develop the characters of our youth and infuse spirit into them. Universal service would go a long way towards accomplishing this.

That nation possesses the most important element of greatness which has a race of military men. Money has been called "The Sinews of War," but it is useless without the sinews of strong men's arms. History has taught us that wealth undefended by virile manhood is the undoing of nations. Greece, Rome and Spain, each in turn fell victims to the sinews of men's arms, when their manhood had degenerated. No state of ancient or modern times has ever achieved greatness except through military power, and has remained great only just so long as that military power endured. There is as yet no indication in this war-torn world of a coming change; and, until the arrival of the millennium, military power will continue to decide the fate of nations.

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

OUR NAVY AND THE WEST INDIAN PIRATES

(CONTINUED)

A DOCUMENTARY HISTORY

By REAR ADMIRAL CASPAR F. GOODRICH, U. S. Navy

Notwithstanding all this excellent work, we read that the schooner *Shepherdess* (Rufus Fink), of Warren, R. I., from Matanzas to New Orleans, on January 31 was boarded and robbed by a piratical open boat of 15 men. Also, that the brig *Leader* (Jonas Jones), of New York, was boarded and robbed by a piratical boat of 12 men, nine miles east of Moro Castle. The crew were shamefully treated.[1]

The next episode, while creditable to Stockton's energy, resulted, for the time being, disastrously to him, for his prize was not condemned and he was sued in the United States District Court for false seizure. He lost the case and was cast in heavy damages. On appeal, it was carried to the United States Supreme Court, which sustained the validity of the capture: "Portuguese ship *Mariana Faliero,* captured by Lieutenant R. F. Stockton, in the United States' schooner *Alligator,* sent into Boston."[2]

Undeterred by a few misadventures, the pirates continued their attacks. "Piracies are still frequent off the coasts of Cuba; American and British vessels are indiscriminately robbed under the most aggravating circumstances."[3]

The complaints direct and the expostulations in the public press against piracy were not without effect in Washington, for, on February 9, 1822, we learn that "Congress in resolutions is taking

[1] *American Daily Advertiser,* February 28, 1822.
[2] ASP, I, 804; RFS, Chap. V.
[3] N. February 9, 1822.

notice of the serious state of affairs in the West Indies."[4] The following shows the general feeling:

U. S. SHIP "HORNET"
HAMPTON ROADS
21st Feby 1822.

. . . . The horrid system of piratical aggression and outrage, which has been so long carried on by those lawless men, notwithstanding our efforts to put a stop to it, seems to be increasing to a degree truly alarming to the mercantile interest, and afflicting to humanity; and yet, the authorities of the Island from which they mostly eminate, and whose inhabitants are the principal authors, look on with a calm, cold blooded indifference, and adopt no measures to suppress them. It was even said publicly at Havanna that a number of villians who were known to be engaged in the piratical system had upon hearing of our Navy's success in destroying some of their band avowed their future intention to spare neither the lives or property of the Americans.

* * * * * * * * *

I have the honor to remain
Sir, very respectfully
Your Obt Svt.
R. HENLEY.

The Honble.
Smith Thompson
Secretary of the U. S. Navy.[5]

The result of agitating the subject is seen in the following, taken from the report of the Committee on Naval Affairs, March 2, 1822:

The extent, however, to which the system of plunder upon the ocean is carried on in the West India seas, and Gulf of Mexico, is truly alarming and calls imperiously for the prompt and efficient interposition of the general government. Some fresh instance of the Atrocity with which the pirates infesting those seas carry on their depredations, accompanied too by the indiscriminate massacre of the defenceless and unoffending, is brought by almost every mail, so that the intercourse between the northern and southern sections of the Union, by sea, is almost cut off.

The committee are induced to believe that this system of piracy is now spreading itself to a vast extent, attracting to it the idle, vicious, and desperate of all nations, and, more particularly, those who have heretofore been engaged in the Slave trade, from which the vigilance of the American cruizers have driven them; and that, if they are not winked at by the authorities in the Island of Cuba, they are in no respect restrained by their interference.

* * * * * * * * *

[4] N, February 9, 1822.
[5] MCL, 1822, No. 17.

That the sloop of war *Hornet,* of 18 guns; the brigs *Enterprize* and *Spark,* of 12 guns each; and the schooners *Porpoise, Grampus, Shark* and *Alligator,* of 12 guns each, are already cruizing in the West India Seas and Gulf of Mexico, for the protection of trade, the suppression of piracy, and traffic in slaves; and that the two gunboats, *Nos. 158* and *168,* are also cruizing along the coasts of Georgia and Florida for the same purposes.

* * * * * * * * *

Resolved, That it is expedient, forthwith, to fit out and put in service the corvettes *Cyane* and *John Adams,* and the sloops of war *Peacock* and *Erie,* for the protection of commerce, and the suppression of piracy in the West India seas, and the Gulf of Mexico, and also to employ the frigate *Constellation,* should the President of the United States deem the employment of a frigate necessary for the purposes aforesaid.[6]

Nor was the government content with idle words, for we read that "the frigate *Macedonian,* Captain Biddle, is about to sail from Boston with four smaller vessels and 200 marines, with instructions, it is said, to sweep the *land* as well as the sea of the pirates of Cuba."[7]

In the meantime, Lawrence Kearney was successfully busy at his wonted pastime:

U. S. BRIG "ENTERPRIZE," OFF CAPE ANTONIA,
7th March, 1822.

Sir:

* * * * * * * * *

Our first duty has occurred at Cape Antonio, the most dangerous place for Merchant Vessels to pass.

My vessel being disguised, this morning was passing the Cape about 7 A. M. when a twelve oared Barge was discovered in pursuit. But soon after she made a retreat towards Mangrove Point; and as I could not pursue her with success with the Brig, owing to the shoals, I ordered away my boats.

The following note, this moment received, will inform you of the result:

"To Lieut. Comdt. Kearney,

"Sir,

"I have the pleasure to inform you that we have succeeded in capturing four Boats and two Launches (sloop Rigged). We landed and took them in a creek, which I have not yet satisfactorily examined. I send you a Barge and a Cutter, and remain,

"Yours, &c.,

(Signed) JAS. M. MCINTOSH, Lieut."

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[6] ASP, I, 788; NAV, No. 53, *2 et seq.*
[7] N, March 2, 1822.

A guard of Marines is sent to assist the party to apprehend the Pirates on shore. . . . .

I am, very respectfully, &c.,

L. KEARNEY.

Com. Patterson,
New Orleans.[8]

A newspaper of a few weeks later gives us this account:

We have a report which appears to be true, that on the 8th ult. the U. S. brig *Enterprise*, lieut. Kearney, captured eight sail of piratical vessels, whose united crews amounted to about 160 men. This must be pretty nearly a finishing stroke to the desperadoes: we have not lately heard of so many piratical acts, but cases are just published which happened in December last, in the capture of the brig *Exertion*, and schooner *Constitution*, of Boston, that have caused no little feeling. *The vessels that seized them were partly manned by the 21 wretches who were recently tried and condemned as pirates at New Orleans, and pardoned by the president of the United States*—they boasted of it; and, in thirty days from the time of their liberation, were at their old trade, with a resolution to murder all their prisoners—but instead of this, they were so humane as to put their prisoners ashore on a low sand key, to perish for want of water or to be swept away by the sea.[9]

About this time a large barge was taken by the gunboat *Revenge*, under Lieutenant G. W. Hamersly, at some point in the West Indies, not specified, probably near the Balize. She was evidently fitted for piratical purposes, a fact which was substantiated by her desertion by her crew.[10]

On March 22, we have a record that the sloop *Jay*, Thompson, of New York, was boarded near Neuvitas and robbed of her whole cargo. Fortunately, however, the vessel and crew were saved.[11]

About this time the Cuban authorities were aroused to the necessity of putting a stop to the depredations on foreign shipping from a base on Cuban soil, for we read that a descent was made by them upon the Cape Antonio gang, in which a number of the latter were killed and wounded. The captain and lieutenant of one gang, being seized, were tried, convicted, and shot. Another raid resulted in the killing of six pirates and the taking of 15 prisoners. It appears that some goods from a Boston schooner led to the inculpation of five persons who were sent to prison. They are

[8] C. L., 1822, Vol. 4, No. 58. Other authorities are: S. O. (M. C. L.) Vol. CXVIII, No. 90; 17C-2S, Sen. Doc. 1, 56; ASP, I, 804; E, 76; M, II, 28; NE, 547; RSN, 1822.

[9] N, April 6, 1822.

[10] RSN, 1822.

[11] MWHP.

stated to have been young men of good appearance and residents of Havana. This last remark is proof, if proof were needed, that piracy was encouraged by even respectable people in that island.[12]

The instance spoken of is among the very few in which Spanish officials attempted to suppress piracy. There can be no doubt that too many of those gentlemen were directly or indirectly interested in its successful prosecution.

The next reference, although textually quoted, doubtless refers to our revenue marine: "April 8, 1822.—Two of the U. S. cutters captured a piratical schooner called the *Pilot*, after an action of 15 minutes."[13]

On April 29, the *Alligator*, under command of Lieutenant W. W. McKean, captured the Columbian privateer schooner *Ciencqa*, of five guns and 30 men, and sent her for adjudication to the United States.[14]

Among the duties which fell to Captain Biddle, now in command of the West Indian squadron, was that of securing the cooperation of the local authorities in the suppression of piracy. For this purpose, he proceeded to Havana on the 30th of April, and addressed the following letter to the governor and captain general:

U. S. FRIGATE "MACEDONIAN," HAVANA,
April 30, 1822.

Sir:

I have the honor to represent, that the commercial relations between the United States and Cuba are already very considerable, and that they would unquestionably be more considerable if rendered more secure from unlawful depredations. As these relations, too, are mutually beneficial, it is important to both parties that they should be effectually protected. For this object, the Government of the United States, on its part, has employed an adequate naval force, which is placed under my direction and control. But as the depredations have been committed chiefly in open boats, immediately upon the coast and off the harbors, it is important that we should have your excellency's co-operation. I have therefore the honor to propose that your excellency should so far co-operate with me as to sanction the landing, upon the coast of Cuba, of our boats and men, when in pursuit of pirates. This measure would be promotive of our common benefit, is indispensable to the entire suppression of piracy, and is not intended in any manner to infringe upon the territorial rights of your excellency. It will operate against those only whose atrocious crimes render them obnoxious to every

[12] N, March 23, 1822.
[13] MWHP.
[14] E, 76.

regular Government, and should place them without the protection of all law.

I have the honor to be, with great consideration and respect,
Your excellency's most obedient and very humble servant,

JAMES BIDDLE.

His Excellency Don Nicholas Mahy,
Captain General and Governor of Cuba, Havana.[15]

To the above, the captain general sent a reply, of which the following is a translation:

HAVANA, May 2, 1822.

I am too sensible of the importance of the commercial relations which exist, and may continue, between the ports of this island and those of the United States, which I am desirous of cultivating, not to have adopted measures to put a stop to depredations which might obstruct them along the extensive coasts of this island under my jurisdiction. I repeat, that ıch measures have been adopted, and have been made public, and, with the zealous co-operation with which you inform me you are charged, we shall doubtless effect shortly a happy extermination of those enemies who, under all colors, have laid waste and committed robberies, both upon the high seas and every coast, without respecting any flag.

With respect to the permission you solicit for landing upon this coast with troops and people in boats, for the purpose of pursuing those pirates, I cannot and must not consent to it. I repeat, that the necessary measures have been adopted to defend my territorial jurisdiction, and for the apprehension of every description of outlaws.

All which I communicate in answer to your official letter of yesterday.

God preserve you many years.

NICHOLAS MAHY
Captain General of the Island of Cuba.

James Biddle, Esq., commanding U. S. ship *Macedonian*.[16]

That the protection of the Spanish authorities was of little avail may be known from the fact that Captain Thomas Brownell, of the brig *Marcia*, from Providence, R. I., beat off, in Havana harbor, under the very nose of the captain general, boats which tried to board his vessel on the 30th of April.[17] This must have been immediately prior to the arrival in that port of Captain Biddle on board of the *Macedonian*. One wonders why this fact was not made use of by Captain Biddle in his official communication addressed to that distinguished officer.

The chartered schooner *Jane* was placed under the command of Lieutenant R. F. Stockton, with 60 men from the *Alligator* and

[15] ASP, I, 805; NAV, No. 2, 61.
[16] ASP, I, 805.
[17] ?

the *Grampus*. In the neighborhood of Sugar Key, on the 1st of May, Stockton seized three schooners, one of them armed with two guns, which was boarded and burnt by Acting Sailing Master Barney. The second, with a full cargo taken from the English brig *Cherub*, was released. The third was chased on shore, the pirates escaping.[18]

Contemporaneous newspapers quote from the log-book of the *Belvidera:*

"2d May, spoke the U. S. schooner *Alligator*, lieut. Stockton, off Sugar Key (cuba); was informed that they had burnt one schooner and taken another, and a sloop, from the pirates, besides an English brig, the captain and mate of which the freebooters hanged. The *Alligator* has also retaken the Colombian schooner *Senega* from the crew, who had mutinied and run away with her." When the *Belvidera* parted with the *Alligator*, captain Stockton was in-shore with 70 men from the *Grampus* and *Alligator*, on board of a schooner of an easy draft of water, and they were exchanging shots with a piratical schooner manned by 70 men. From her position it was considered doubtful whether the pirate could be carried. The famous Lafitte was among them. Captain Stockton had taken no prisoners. . . . . This shews that our officers and seamen are very active—but it proves, also, that they must have the sanction of government to enter the country in pursuit of the miscreants.[19]

The newspaper account of the above-mentioned incident is interesting in itself and supplies some details not contained in the official report. It will be noticed that the Columbian privateer is herein called "*Cienega*":

The U. S. schooner *Alligator*, lieut. com. Stockton, has arrived at Charleston from an active cruise in the West India seas, especially on the coast of Cuba, after pirates. Lieut. S. recovered several vessels from the possession of these wretches, and rescued some prisoners from their murderous hands, but made no prisoners—the pirates keeping close to the shore, and always being on the alert to escape.

The account of the cruise of this vessel, (for a while in company with the U. S. schooner *Grampus*, lieut. com. Gregory) is highly interesting—but we have not room to give it now. There is no sort of doubt but that the pirates are encouraged and protected by certain of the authorities in Cuba, especially by the governor of Holguin, with whom a correspondence was held which will probably be published. Plundered goods were publicly brought in and sold at Xibara, and lieut. Stockton was hardly restrained, by his positive instructions, from settling the account with the commandant and people of that place.

It appears that the famous Lafitte is at the head of some of those parties—that their business is increasing—that they often murder whole crews, and

[18] E, 76.
[19] N, June 22, 1822.

that some strong act of justice, after the manner of *Jackson*, must be committed to suppress these dreadful villanies, to which there seem to be parties throughout the island of Cuba.

The *Alligator* has brought in two prizes, one the Colombian privateer schr. called the *Cienega*, mounting 1 long 12 and 4 carronades, the crew of which had mutinied at Ragged Island,[20] and was taken by the *A.* off Neuvitas, without any commission on board; the other a sloop, found in the neighborhood of the pirates at sea, with only a dog on board, and marks of blood on her deck.[21]

The correspondence of Captain Biddle at this time indicates the inefficiency of the measures referred to by the captain general of Cuba in his reply, under date of May 2, to Biddle's official communication.

UNITED STATES FRIGATE "MACEDONIAN,"
HAVANA, May 6, 1822.

Sir:

. . . . On the 29th I had an interview with the Captain General relative to the business with which I am charged by Mr. Adams, the Secretary of State. On the 30th I addressed a communication to him upon the subject of landing our boats and men upon the Coast of Cuba, when in pursuit of pirates. I enclose a copy of my communication, as also of the Captain General's answer; and you will perceive he declines acceding to the proposition I made to him. I think it preferable to pursue one object at a time with the government here, and I shall therefore drop this subject for the present, renewing it when my correspondence in regard to the Florida documents is terminated. He certainly ought, and perhaps will, consent to our landing upon those parts of the Coast that are uninhabited and where, tho' within his jurisdiction, he is utterly incapable of exercising any authority. There are many such places on the coast of this island.

The measures adopted by the Captain General, and to which he refers in his letter to me, consist simply of a proclamation in March last establishing certain regulations with respect to the clearances of coasting vessels, launches and other boats. These regulations, I understand, are not strictly enforced, and even if they were, they are altogether insufficient for the suppression of piracy along the extensive coast of Cuba. As the proclamation has been published in the American Newspapers, I do not think it necessary to send you a copy.

* * * * * * * * *

I have the honor to be,

Very respectfully,

Your most obedient St.,
JAMES BIDDLE.

Hon. Smith Thompson,
Secretary of the Navy.[22]

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[20] In the Bahamas.
[21] N. June 1, 1822.
[22] C. L., 1822, Vol. 4, No. 79.

Salt Key, or Cay Sal, some 110 miles east-northeast of Havana, about this time was obtaining a questionable notoriety, for, on May 15, the brig *Aurilla,*[23] from Baltimore to New Orleans, was plundered in this locality, and her people maltreated. Also, the brigs *Busy,* of Warren, *Fair Trade,* of Boston, and *Hiram,* of Newport, arriving at Havana on May 18, reported that they had all been captured on the 15th instant off Salt Key by two piratical schooners, receiving the same treatment as the brig *Aurilla,* besides having two men impressed out of the *Busy.*[24]

In June, the schooner *Shark,* Lieutenant M. C. Perry, accompanied by the *Grampus,* Lieutenant F. H. Gregory, captured the pirate ship *Bandara D'Sangare* and a schooner. Three prisoners were taken and the vessels were sent to the United States.[25]

An interesting side light on the intimate relations which existed between the pirates and the people on shore is found in the "Atrocities of the Pirates," in which Aaron Smith relates his experiences when forcibly detained by a Cuban pirate in 1822, and made to serve as navigator. His story amply justifies the title of his memoir. The following are a few extracts:

> At two o'clock in the afternoon, I perceived a number of boats and canoes pulling towards the corsair; and the Captain told me that he expected a great deal of company from the shore, and, among others, two or three magistrates and their families, and some priests, observing also that I should see several pretty Spanish girls. I remarked, that I wondered he was not afraid of the magistrates. He laughed, and said I did not know the Spanish character. Presents of coffee and other little things, said he, will always ensure their friendship; and from them I receive intelligence of all that occurs at the Havannah, and know every hostile measure time enough to guard against it. Two magistrates, a priest, and several ladies and gentlemen now came on board, and were received in great pomp by the captain, whom they congratulated on his success.
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> * * * * * * * * *
>
> Can it be a matter of surprise that these miscreants have committed their lawless depredations for so long a time, and with such impunity, when the very men whose duty it was to extirpate them, were daily encouraging them; when the pirate could boast that the magistrate was his friend, and receive, in the face of all the laws of his country, and of nations, such proofs of his friendship, as to be enabled to thwart all hostile measures adopted against him? European nations may send out their crusades against them; but while the execution of the laws is placed in such hands; while the pirates

[23] *Vide* Introduction, p. 13.
[24] N, June 22, 1822.
[25] E, 76 and RSN, 1822. A graphic account of a survivor may be found in WFL, 229-239.

plunder, and the magistrates and his myrmidons share; all their efforts will be vain; and like the Hydra, when they destroy one head, a fresh one will supply its place.

During the month of August but three captures by pirates are reported. They are:

August 9—The schooner *Coquette,* Souther, of Georgetown, D. C., and schooner *Eugene,* Coffin, of Boston, were plundered by the brig *Palmyra.*[26]

The schooner *Mentor,* Harrison, of Philadelphia, was taken by pirates and robbed. The crew were cruelly treated. Vessel given up.[26]

The schooner *Bee,* Jones, of Charleston, was taken by pirates, near St. John's, Cuba.[26]

The details of this last case came out two years later in the trial of one of the pirates connected with it:

TRIAL FOR PIRACY—Yesterday, Josef Perez, the Spaniard, a sketch of whose case we gave on Wednesday, was arraigned before the Hon. Smith Thompson, in the Circuit Court of the United States, for piracy. The prisoner had been put on his trial at a former court, but the jury not agreeing upon a verdict, were discharged; afterwards, by the Supreme Court, he was ordered to be tried by another jury, and was accordingly arraigned a second time, yesterday forenoon.

The indictment charged him with committing the crime of piracy off the Island of Cuba, in the month of August, 1822, on board the schooner called the *Bee,* of Charleston, Capt. Johnson. This vessel was bound from Charleston to St. JEAN DE REMEDIE, and when within a few miles of her destined port, was brought to by a piratical schooner, boarded, taken possession of, and then the pirate schooner was hauled along side of the *Bee,* and they commenced robbing her of her cargo. After taking the trunks, one of which contained a number of watches belonging to a passenger, wearing apparel, and such other articles of value as they could find in the cabin, they proceeded to break open the hatches and take on board of their schooner, such parts of the cargo as they pleased. They kept possession of the *Bee* nine days, during which time they took some of the cargo on shore and sold it. They compelled capt. Johnson and his crew to throw the ballast out of the hold of the piratical schooner to make room to receive the cargo of the *Bee,* and beat him with a rope's end when he did not work to suit them. At one time they beat him with a cutlass. To frighten the cook and make him disclose something relative to the property on board the *Bee,* Perez was in the act of cutting the peak halyards to hang him up, but was ordered to desist by one of their crew. At length they concluded to set captain Johnson, the passenger, and his crew, all except a man by the name of Debow, adrift in an old leaky boat which they had taken from some fishermen on shore, and burn the schooner *Bee,* which they did. After being thus exposed for five days, in an open boat, with one whole and one broken oar, they reached Matanzas where they separated, and Porter, one of the crew,

[26] MWHP.

went to Nassau, (New Providence), where he saw Debow and three of the piratical crew who had robbed them, prisoners, on board the British sloop of war *Tyne*. From Nassau he came to New York. As he was walking up Broadway, the very day he landed, he met the prisoner and instantly recognized him, seized him & immediately took him to the Police office to make good his charges against him. On the statement he was fully committed for trial. In the meantime Cap. Johnson arrived, and both he and Porter appeared before the Court and Jury, and gave such a consistent and convincing account of the prisoner's guilt, in being concerned in the crime of Piracy on board the *Bee*, that, after many hours spent in the investigation of facts, the jury, to whom the cause was committed at half past 9, P. M. returned in less than an hour, with a verdict of GUILTY.[27]

Perez was promptly sentenced to be hanged,[28] but as promptly released from confinement and encouraged to continue his dirty work. "The President of the United States has, according to custom, granted a pardon to Jose Perez."[29]

The capture on the 16th of August of the piratical brig *Palmyra*, formerly the *Pancheta*, nine guns, 83 men, is especially worthy of note for certain consequences that followed her seizure. After a short action, she surrendered, having lost one man killed and six wounded. She was sent to Charleston.[30] The following is the official report by Lieutenant Gregory to Captain Biddle:

U. S. SCHOONER "GRAMPUS," ST. THOMAS,
August 24, 1822.

I have the honor to acquaint you, for the information of the honorable Secretary of the Navy, that I arrived at St. Bartholomew on the 2d of August, and sailed again on the 7th, with convoy for St. Thomas. On the morning of the 9th, fell in with two Spanish cruisers of Tortola, who demanded permission, and claimed a right, to board the convoy, which being peremptorily refused, they hauled off. The same day I arrived at St. Thomas, and received from Captain John Souther, of the schooner *Coquette*, of Georgetown, D. C. the enclosed deposition, having been plundered by those vessels. On the 14th I left St. Thomas with two valuable vessels bound to Curaçoa, and on the evening of the 15th saw an hermaphrodite brig hovering upon our weather quarter, apparently a cruiser; continued my course without regarding her; at daylight made her ahead, and gave chase; at half-past nine, having gained considerably upon her, she hoisted English colors, changed them to Spanish at ten and fired a gun to windward, and at half-past ten hove to and set a white flag at the fore. On nearing her I perceived her to be the pirate that had fired upon and plundered the *Coquette*, and therefore considered it my duty to arrest her. At twenty minutes past eleven the *Grampus* was laid under her lee, within pistol shot,

[27] NEP, April 30, 1824.
[28] NEP, May 3, 1824.
[29] NEP, June 4, 1824.
[30] E, 76 and MWHP.

and her surrender demanded as a pirate, which she affected not to understand, and answered me to that import. While repeating the demand, he poured into us a full volley from his small arms and cannon, which was instantly returned, and continued three minutes and a half, when he struck his colors, a complete wreck, having one man killed and six wounded, and in a sinking condition. The boats were despatched instantly to their relief, and it was only owing to the great exertions of Lieutenant Voorhies that she was prevented from going down, having received three shot between wind and water, one of which injured the pumps. The *Grampus* received some trifling injury in her sails and rigging, but not a man hurt.

The captured vessel proved to be the notorious privateer *Palmyra*, formerly the *Pancheta*, from Porto Rico; carries one long brass 18 and eight 18 pound carronades, and a crew of eighty-eight men. They acknowledged the robbery of the *Coquette*, and the only excuse given by the officer, is, that they could not prevent those things happening now and then. Several of the plundered articles were found on board.[31]

[31] ASP, II, 193.

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE UPPER YANGTSE RIVER

By LIEUTENANT A. F. CARTER, U. S. Navy

Believing that the upper Yangtse River (that is to say the river above Ichang) is little known to the service, and that the conditions therein differ somewhat from those of other waters in which our vessels have cruised and with which the average officer is familiar, an attempt will be made to narrate some of our experiences and indicate the conditions encountered in those waters. Steam vessels, mostly gunboats, have been navigating the upper Yangtse since 1898, and a number of interesting books, containing useful navigational data, have been written. Should one desire to go into such details these may be consulted, but this article will deal only with impressions gained during less than two years in the upper Yangtse and the methods which have been found most useful in handling steam vessels.

The river from Ichang to its mouth courses through a great alluvial plain, and its perils consist largely of silt banks and shifting channels. Starting up river from here there is an abrupt change. One-half hour after getting underway at Ichang and standing up river the steamer makes almost a complete right angle turn, and enters the Ichang Gorge. The cultivated slopes, the silt shoals and the high earthen banks (or levees) of the lower river are, indeed, a decided contrast to the deep gorge with precipitate rocky sides rising several hundred feet on both sides of the river. It all comes so suddenly and the scenery is so entirely different from that which one sees on the lower river that doubtless few travelers really begin to appreciate the beauty of the Ichang Gorge before its several miles have been traversed and the Lampshire Gorge has been entered. When one first enters the Yangtse gorges the water appears peaceful and smooth, and there is really little to indicate the difficulties which await a steamer only a few hours

farther up. As a vessel proceeds through the first two gorges the gradual increase in current strength is quite noticeable.

Finally the Wu-i-tan, a rapid of the second or third order, depending upon the water level, is reached and your vessel has a go at her first rapid.

This rapid is of little importance, and lies between Heng-shih-tse on one side and Cha-pou on the other. Having gotten through this without difficulty, the vessel enters a winding rocky stretch of water known to the natives as Yao-tsa-ho. Of all the bad places in the upper Yangtse, there is probably none worse all the year round than this. The currents are strong at all water levels, and throughout its 14 miles of length it is always a source of danger to both junks and steamers. Here the river widens out and is flanked on both sides by great irregular masses of rock, some solid, some just great banks of large boulders, and others of small rocks. Huge rocks and boulder banks abound in the river itself, and from some of the shore rocks long irregular ribs extend out into the swift-running stream, causing violent swirls and very strong currents. At low water the channel is irregular and full of sharp turns, while at high water this portion of the river becomes a mass of dangerous swirls and whirlpools, caused by the strong down-coming water striking the irregular rock formations and bounding off at varying angles.

At the head of Yao-tsa-ho is the Kung-ling-tan—"tan" being the term applied by the natives to all rapids. In winter this is one of the impassable places; not so much on account of the strength of the current as on account of the shoal and tortuous channel. With an Ichang watermark of seven feet or more it may be navigated with safety. With less than that it is dangerous. According to all information obtainable, only one vessel, the German S. S. *Suihsiang,* has attempted to navigate this rapid during low water. She left Ichang on the morning of December 27, 1900, bound up river on her maiden trip. About 11 a. m. she struck one of the so-called "pearls" of the Kung-ling-tan, and in less than an hour she was a total wreck. No doubt a comparatively small amount of money wisely spent could remove the worst dangers at this place, and make it at least no worse than many others which are navigated at low water with a fair margin of safety.

Looking up river from the head of the Kung-ling-tan one sees less than half a mile away the stately entrance to the Niu-kan, Ma-fei-hsia, or Ox Liver, Horse Lung Gorge; so called on account of certain formations on the cliffs bearing, to the imaginative Chinaman's mind, some resemblance to these internal organs of the animals named. This gorge is about four miles long, and is one of the prettiest in the river.

At the upper end of this gorge is the Tching-tan, or New Rapid. About 300 years ago, as nearly as can be ascertained, an enormous amount of rock broke loose from the mountain on the right bank and slid into the river, partly blocking its flow and forming the Tching-tan. At high and middle water this rapid disappears, but at low water there are three distinct rapids. Of these the uppermost one is by far the worst. With the Ichang water-

mark at or near zero this upper rapid is impassable for anything except junks controlled by numerous lines and in the hands of experienced pilots.

Passing the Tching-tan, the Mitan Gorge, generally known as Ping-so-bao-jen Gorge, is entered. This gorge is only about one and one-half miles long, and due to the depth of the water a fairly slow current is encountered, except at high water. Above the Mitan Gorge the river widens and the currents become more troublesome. Particularly troublesome is that stretch of water generally known as the Kwei-chow Reach. This is very bad at low water, and troublesome at high levels on account of the numerous swirls. It embraces the very narrow passage of Whong-tsien and the turbulent races of Se-chi-tang, Ho-san-tan, Fong-tan and Lien-ho-tan, where the fairways are narrow and dangerous, and the danger of collision with downward bound junks is great. Strong water is encountered the greater portion of the distance between here and the Yetan.

The Yetan is the strongest rapid on the river. The approach, except when the rapid is at its worst, is not so difficult; but the current is very strong throughout a considerable rise and fall of the river. It is probably at its worst with an Ichang watermark of about 12 to 18 feet and river rising. The rapid was in this condition in May, 1915, when the *Monocacy* was on her way down river. While still a mile above the rapid it could be plainly observed, and some time before reaching it the roar of the rushing water could be heard. Just before entering the rapid full speed was rung up, so as to give all possible assistance to the rudders, and we entered the strong water steering carefully for the center of the tongue. The vessel passed through the swiftest part of the rapid at almost incredible speed, probably not less than 26 knots over the ground. The drop over the rapid was very noticeable, and when the little *Monocacy* dove into the "chow" water below the decrease in speed was so pronounced that it seemed as though she had suddenly stopped.

Yetan is caused by an immense boulder bank extending out from the left bank more than halfway across the river. When this bank is just under cover the navigation for junks is very dangerous. At high water no rapid exists at Yetan.

About four and one-half miles above Yetan full speed is again required for a few minutes in order to steam the Ta-pa-tau-tan. About one and one-quarter miles above Ta-pa-tau-tan the Niu-kou-tan is encountered. The reach of water between Chong-shih-men and Niu-kou-tan is one of the most turbulent in the river at high water, and is rendered particularly dangerous at such times on account of the difficulties incident to downward bound junk traffic.

Niu-Kou-tan, like Yetan, is caused by a large boulder bank extending out from the left bank. If entered on the right or south

side of the river by an ascending steamer of 13 knots speed Niu-kou-tan offers no special difficulties at most water levels. In October, 1914, when the *Monocacy* was bound up river, the pilot elected to enter the rapid from the left or north bank side. The boulder bank here extends out in such a manner that as a steamer comes up to the rapid point at full speed it must enter the rapid with a violent current on the bow. The result, naturally, is a literal submersion of all the forward portion of the main deck, with sheets of water thrown onto the upper deck and the bridge. The *Monocacy* on this occasion buried herself to such an extent that the forecastle was entirely under water, and for an appreciable time only the tops of the anchor engine and capstan were visible. As will be shown later, entering a rapid at such an angle is an extremely hazardous proceeding, and should not be done when avoidable.

From Niu-kou-tan to the entrance of the Wushan Gorge the river presents some excellent views, and although the currents are strong with a few lesser rapids, no particular navigational difficulties are encountered. The Tsing-chu-piao rapid, about one mile above Patung, is quite a strong rapid, and is difficult during low water. Except in high water and with river rising rapidly at mean water, the current in the Wushan Gorge is not strong, and the ordinary conditions for an up-bound steamer are very favorable. The Wushan Gorge is about 28 miles long. The cliffs on both sides are high, ranging on the average perhaps about 1000 feet above river level. In some places this gorge is probably not over 150 yards wide. The view as one passes through is magnificent.

At the upper end of the Wushan Gorge is the city of Wushan, built on a slope well above the river level, and surrounded by the familiar type of Chinese wall. Between this place and Kwei-chou-fu are a number of rapids, but of these the most important are Hsia-ma-tan (or "Get down from horse rapid") and the Pao-tse-tan.

The Hsia-ma-tan is another rapid which is formed by a boulder bank projecting out from the left or north bank of the river. The bank is apparently caused by rocks, sand, etc., which are washed down from the hills by a small mountain stream entering the river just above it. Up the ravine caused by this stream is a remarkable old cave known as Old Dragon Cave. The story goes that all mounted men should alight at this place and do homage to the presiding genius in the cavern; hence the name of the rapid. The rapid is worst at low water. The writer has never experienced any difficulty here. At high water the rapid disappears.

The Pao-tse-tan, however, is a different proposition. It is formed by a rocky bank on the right and a boulder bank on the left bank of the river. At all stages of the water, except dead low water, this rapid exists, but it is worst at middle water and

mean high water. It is rendered all the more dangerous by its unusually difficult approach. For some distance below it (varying in intensity according to the height of the water and the strength of the rapid) is a bay of swirls and whirlpools. Great care must be exercised in making the approach. Much difficulty is experienced in keeping a vessel on even an approximate heading, for the swirls throw her violently first to one side and then the other. It is at such places as this that the wisdom of fitting four powerful rudders to a vessel of the *Monocacy's* class is emphasized.

In October, 1914, the *Monocacy* found this rapid by far the most difficult between Ichang and Chungking. The watermark at Ichang upon departure was about 25 feet. On approaching Pao-tse-tan violent swirls were encountered, and although the vessel was steaming at top speed, we were obliged to give her practically full rudder first one way and then the other. Finally the rapid was reached and entered from the left bank side well up above the end of the tongue. Both engines were forced to their utmost, and although they actually made 360 R.P.M. (their designed R.P.M. is 300) we lost ground slowly for a few moments. Finally we made the top of the rapid and had just begun to forge steadily ahead when the working of the port engine telegraph indicated something wrong. The danger being past, that engine was stopped, and an investigation showed that a small rock had been taken in through the port circulating pump suction and had jammed the rotar of the pump. Had this accident occurred one-half minute earlier it is hard to predict what the outcome might have been. Fortunately, the auxiliary exhaust had been, as a matter of caution, opened into both condensers. Had it been on the port condenser alone (as it had been earlier in the trip), steering engine, feed pumps, and all other auxiliaries would have been rendered inoperative almost immediately. A rather nerve-racking experience of the same character had previously demonstrated to us the wisdom of such a precaution.

Having passed Pao-tse-tan one breathes a sigh of relief, for unless the river is fresheting there are no first magnitude rapids to be encountered for many miles. About five and one-half miles above Pao-tse-tan the Bellow's Gorge opens into view, and soon the vessel enters this grandest of the Yangtse gorges. The cliffs rise sheer out of the water to a height of 700 feet, while not one-half mile back, on the left bank, the peaks are said to be more than 4500 feet high. The view on entering the gorge from either end is one of the most magnificent obtainable in the river. The

water in the gorge is deep, and the navigation, except at high water and when the river is fresheting, is comparatively simple. During high water the Black Rock Rapid is bad, especially so for junks. Near the western entrance there are bad swirls and whirlpools at high water, and many junks come to grief in this locality. In fact, this gorge, like the others, is rendered dangerous if the river rises abnormally, for then the swirls become very violent. The reasons for this will be given later.

As an up-bound vessel nears the western entrance to Bellows Gorge a number of chiseled holes may be seen on the port hand in the side of a perpendicular cliff rising probably not less than 500 feet out of the river. The Chinese say that sometime about the third century, A. D., a war existed between the ruling authorities above and below the gorges. The invaders came up by river to attack Kwei-chou-fu, the city at the head of the Bellows Gorge. The western entrance, through which it seemed they must emerge, was strongly fortified, and enormous chains are said to have been forged and stretched across the river, their ends having been made fast to holes in the rocks on the right bank, and to huge iron posts imbedded in a flat rock of the left bank. The river people say in support of this that at low water these holes and the posts may be plainly seen if one knows where to look for them. Finding themselves confronted by such formidable defense, the invaders chiseled these holes in the side of the cliff, and from them built a ladder by which they were enabled to go up and over the cliff, thus taking the defenders on the flank, and hence accomplishing their ends.

On the starboard hand as one goes up river, and probably a mile from the western entrance, is a cave in the side of a cliff. In small crevasses, high up above the water, a number of Chinese bellows or windboxes can be plainly seen. Just who put them there and when they were put there seems to be a matter of considerable doubt. Some say that it is from these that the gorge derives its name of " Bellows," or "Windbox," as it is sometimes called. From the Chinese the writer has heard several explanations offered, but no two of them agree. One old pilot said a " Joss man " had put them there to make a favorable wind blow through the gorge for up-bound junks.

The city of Kwei-chou-fu, situated about two and one-quarter miles above the gorge, offers a very good mooring place. Gunboats and river steamers usually coal here. Few travelers, however, go into the city, for although picturesque at a distance, it is not particularly inviting when seen close aboard.

Above Kwei-chou-fu, or Kwei-fu, as it is commonly called, the appearance of the Yangtse is quite different. Precipitate cliffs and deep gorges gradually give way to long sloping banks, which, where possible, are cultivated. There are a number of rapids, but few of them offer any particular difficulty to a vessel of 13 knots or more at ordinary water levels. The navigation above Kwei-fu may therefore be considered much easier than that below this place. Between Kwei-fu and Wanhsien (a distance of 68 miles) there are many rapids; but of these the following are the most important: The Lao-ma-tan, or "Old Horse Rapid," bad at low water, but never very difficult for a high-power steamer; the Miao-chi-tse-tan, or "Temple Stairs Rapids," fairly bad at all levels, and always to be reckoned with; the Tung-yang-tse-tan, bad at low water, and the Hsin-lung-tan, or "New Dragon Rapid." The Tung-yang-tse-tan is a particularly vicious rapid during low water. The passage is narrow, and it is a very bad place to encounter downward bound junks. The Hsin-lung-tan was formed on September 30, 1896, when, after more than one month of incessant rain, a portion of the hill on the left bank suddenly broke loose and slid into the river. During low water this is the worst rapid in the Yangtse, and is one of the impassable places for steamers. The average difference in water level immediately above and below this rapid in February and March is said to be about seven to nine feet. In 1915 the water was lower than heretofore, and experienced river men estimated the drop at that time as 12 feet. No rapids exist between Kwei-fu and Hsin-lung-tan during high water, and except for the swirls even Hsin-lung-tan is negligible.

About one and one-half miles above Hsin-lung-tan is the village and bay of Pan Tuo. As a winter mooring and drill place this is probably the best in the upper river. A vessel may anchor a hundred yards off the big sand bank, and men may be landed for drill and exercise. Anyone familiar with Szechuan, or similar hill country, will appreciate what it means to find a piece of ground which is fairly level for a couple of hundred feet. It is, indeed, unusual to be able to conduct an infantry drill in a space much larger than the average ship's quarter-deck. The *Monocacy* remained more than one week at Pan Tuo during December, 1915. Pan Tuo is one of the few places in the upper river which is considered safe as an anchorage, or a mooring, using anchors only. The *Monocacy* anchored in about four fathoms of water with about 18 fathoms on her riding chain. When day broke the following morning the sand bank near which we had anchored presented an appearance entirely different from that of the preceding day, and large portions of it could be observed breaking off and dropping into the water. The long sloping bank of the day before had entirely disappeared. Farther inshore was just a steep bank. Soundings were taken and the water found to vary from seven to

nine fathoms, but the vessel had apparently changed position very little. The water had actually fallen a few inches during the night. The only plausible explanation seemed to be that the whole bottom of the small bay is on a great sloping rock. Silt and sand were deposited by the heavily-laden high waters of summer, and when the river fell to a certain level cross currents or underwater swirls were set up which gradually eroded the sand flooring, and as this was washed out the heavier bank above gave way and worked down to take its place, a large portion of it in the meantime having been taken up by the then fairly clear water and carried on down river. Needless to add, the *Monocacy* has since then made the practice of getting out lines apply to all mooring and anchoring places alike.

About 24 miles above Pan Tuo is the city of Wanhsien, distant about 183 miles from Ichang and about 175 miles from Chungking. Officers, both naval and merchant, I believe, experience a distinct feeling of satisfaction when their vessels arrive safely at Wanhsien. There is a feeling that the worst half of the up-hill work from Ichang to Chungking is over, and that with an even break of luck the remainder will be safely and shortly accomplished. Steamers can find a good mooring just opposite the city, but the water front which may be so used at all water levels is very limited. In years past Wanhsien was a very important center of trade, second only to Chungking in importance; but in the past few years it is said to have been of less importance commercially than heretofore. Preparations are being made to open the port in the near future, and this will undoubtedly attract foreigners and add to its importance. On the other hand, the projected (and already surveyed) Szechuan railroad does not come within many miles of this city, and should the railroad be built and Wanhsien left entirely out of consideration it will seriously affect the progress of the place. There is usually an abundance of steaming coal at Wanshien, and all vessels fill bunkers here for the run to Fuchow and Chungking.

Seven miles above Wanhsien is the famous Footan (or Hutan) Rapid. At low water the rapid does not exist; at middle water it is bad, and at ordinary high water, say 60 feet local, it is the worst rapid in the Yangtse River. Above that level Footan improves, and the Fu-mien-tan and Kwan-yin-tan take precedence for hard going. Its appearance at low water is most peculiar. Extending out from the right bank is a huge pile of small boulders, while on the left bank the river is narrowed to less than half its average width by high ribs of peculiarly honeycombed rocks. Their appearance is not unlike a section of Swiss cheese.

Above Hutan the river widens and the hills have a greater slope than they do farther down river. The navigation for about 21 miles presents no special difficulties. In fact, there is fairly good going until Shih-pao-tsai is in sight.

Probably the most picturesque place on the upper river is Shih-pao-tsai, a conspicuous rock rising up 300 feet on the left bank of the river and surmounted by an ancient Buddhist temple. From the river it appears to be rectangular, and the sides are so symmetrical that it is hard to believe that it has not been built by human labor. On the river side of the rock is a sort of pagoda-pavilion, containing a stairway to the top of the rock. Its appearance, I believe, impresses one more as a great medieval castle than as a temple.

Above Shih-pao-tsai the currents are strong all the year round. To even a maritime man this part of the river appears not fraught with many difficulties if he sees it with the watermark at Ichang at 25 to 35 feet. He will wonder, however, why the pilot insists upon crossing back and forth so much, and he will decide in his own mind that the difficulties of the navigation are very much exaggerated. Let this same man make the trip with the Ichang watermark at about 15 feet, and again with it at about 5 to 10 feet. As the water begins to fall he will see the tops of numerous ledges of rock, and then at low water he will be surprised to see the extent of these. They are everywhere; some running out irregularly from one bank or the other; some looking like huge feelers extending perhaps a mile or more down river, or at an angle to the flow of the current. Besides these there are detached masses of rock, great boulders reaching 70 or 80 feet above low water, and innumerable shingle banks which have proved the undoing of more than one vessel already. He will, in fact, realize that this rushing, rock-bound stream is, for navigational purposes, in a class limited to very few, and in many characteristics unequalled. He will understand why his native pilot is an old man before he is a reliable pilot; and, if he has a sense of justice, he will admire and respect the intimate detailed knowledge of a man who, without charts, buoys, beacons, or other navigational aids, pilots his vessel in safety through 500 miles or more of this water at levels varying on an average of 60 to 70 feet to the year.

There is really little change in the navigational aspect of the river from Wanhsien to Chungking, or even to Suifu, which is 238 miles above Chungking. There are, of course, occasional reaches of safer and slower running water, but these are rare, and cover a comparatively small percentage of the river. Above Footan none of the rapids is bad except in high water freshets. At such times the difficulties incident to strong swirly water are quite general, but are accentuated at such places as Fu-mien-tan, Kwan-yin-tan, Yellow Flower Gorge, Kiun-chu-tan, etc. A good general rule to follow during a July or August freshet is to tie up and wait until the river

stops rising, for bucking a rise of a foot an hour, or more, is a heart-breaking undertaking.

About 48 miles above Wanhsien the city of Chungchau is passed. It is said to have been a place of importance in days gone by, and its appearance from the river indicates the probable truth of this statement. At present it is of little importance. An excellent mooring may be found here, and for naval vessels it is a good place for drills. An old target range may be found inside the city which the local officials will allow to be used.

Leaving Chungchau, the next place of interest is Fengtu. Located on a low hill and "protected" by several pagodas and the Mountain of the Emperor of Heaven, it presents a rather pleasing appearance from a vessel standing up river. It will not bear a closer inspection though, for, as some one has truthfully said, its streets are "filthy in fine, and impassable in wet weather." In the flood of 1870 the city was almost completely destroyed, and a new site, surrounded by an expensive and elaborate wall, was decided upon by the officials. The new site was 200 feet above river, in order to insure safety during the summer freshets; but the people refused to leave the old site, some saying that the new city was haunted, and others that it was too far to carry water. Just below the city, on the left bank of the river, is the sacred Mountain of the Emperor of Heaven. On its summit are a number of temples, and its partially wooded slopes are literally honeycombed with graves and tombs. Few spots in China are more sacred to the native than this mountain. The temples are said to be more than 1000 years old. Captain S. C. Plant, inspector for the upper river, in his account of Fengtu says, "In one of these temples near the summit the visitor, with a show of ceremony, is shown a hole, said by the priest to lead to the center of the earth; but on dropping a piece of lighted paper down, bottom is reached at perhaps 20 feet. Another remarkable feature of the Tien-cho-shan is that for a very small sum a pass to Paradise, via the pole star, may be obtained, and for another small amount a document insuring the safe and happy delivery of the *enciente,* both bearing the seals of the high priest of the Temple of the Emperor and the local mandarin." The *Yangtse Kiang Pilot,* 1914 edition, describes another of these temples as follows: "The temple dedicated to the emperor of the 'Yin,' or dead, is supposed to be the residence of the emperor of Hades. At every Chinese death the officiating Taoist priest writes a letter to the Tien-tse, duly addressed to Fengtu Chang, notifying him of the newcomer. The dispatch, however, is not sent through the terrestrial, but the celestrial, post, being burnt to ashes. The precincts of Tien-tse-shan are supposed to be haunted by innumerable ghosts, and no Chinaman will venture near it at night."

Just above Fengtu the navigation is very difficult at certain water levels. A great area of straggling rock, called Tsan-pei-leang, extends more than two-thirds the distance across the river from the left bank, while from the right bank, opposite this, large irregular rock formations project. When the water is low and flowing between these two there is no difficulty in piloting through the channel (called Hu-ping-tan); but when the water rises sufficiently to cover the rocks, the passage in between becomes a rapid. An intimate knowledge of the locality and skill in handling the river craft are required to safely navigate this place at such times. Long

experience and close application, combined with good judgment, qualify the pilot to decide when the Hu-ping-tan channel must be followed, or when it is safe to cross over the top of the Tsan-pei-leang. The general rule is that the channel between the reef and the left bank is available when the Tsan-pei-leang reef is awash. It is such propositions as this that constantly confront the up-river pilot; and upon his judgment depends the safety of the vessel.

About one and one-half miles above Hu-ping-tan is the Kwan-yin-tan. Like Footan, this rapid is nothing in low water. In very high water, and particularly when the river is fresheting, it is very strong and swirly. It was while attempting the approach of this rapid that the little steamer *Shu-tung* struck on the top of one of the great projections of rock in this locality. The vessel was proceeding over exactly the same ground that she had covered on the preceding trip, and with water at the same level. Suddenly, and without any warning, a great boil and inrush of water, oversetting onto the rocks, rendered the vessel's engines and rudders useless for the moment, and she was thrown violently onto the rocks. These boils and oversets (called *Fah-sui* by the Chinese) occur off this rapid at regular intervals of about 15 minutes during the high-water stage of the river. It is said that, viewed from the nearby rocks, they are not unlike the surf on the seashore. Attempts to float the *Shu-tung* proved unsuccessful and, as the river was falling rapidly, it seemed that the little vessel was doomed. Her commander and his European engineer determined to make a fight for it, and at once discharged the vessel as much as possible, and as the water went down shored her up so as to prevent her being seriously injured. As soon as she was entirely out of water her bottom was repaired and painted, the irregular rocks under her bottom were cut away, and all the available timber in the surrounding country was taken to make launching ways for her. Finally, after 30 days of incessant labor, the little vessel was launched into the river below, which in the meantime had receded 40 feet, and proceeded on her way to Chungking.

The run of 30 miles from Kwan-yin-tan to Fu-chow, although not possessing any particular charm, is, if machinery is working well, never monotonous, for, unless the river is rising rapidly, good time is made and a certain degree of pleasure is derived from the anticipation of a good mooring place not many miles away. Then, too, if the run from Wanhsien to Fu-chow is attempted in a single day, keen interest in the speed is only natural, since it must decide whether the mooring place at Fu-chow can be reached before dark. The city of Fu-chow, situated on a high bluff at the confluence of the Yangtse and the Kien Kiang, presents a rather hopeful

appearance as it opens into view from an up-bound vessel. On closer approach it is, like most other Chinese cities, distinctly disappointing. The Kien Kiang, or Little River, as it is sometimes called, is said to be navigable for native boats for a distance of 150 to 200 miles above Fu-chow. The boats employed for this purpose are, perhaps, of all Chinese boats, the most eccentric in design. To the foreigner they are commonly known by the expressive term of "crooked-stern" boats. The after end of the main deck twists to one side until at the stern it is practically at right angles to the normal plane of the deck. Over the midship section of the unwieldy-looking craft is built a sort of flying bridge. An enormous sweep, extending over the stern and supported on the high side of the twisted stern, is worked from the flying bridge. These vessels are not fitted with rudders, but are steered solely by the sweep. The origin and idea of the "crooked-stern" design is somewhat uncertain, but it is probably the result of many centuries of the same kind of navigation on this swift mountain stream. Like everything else Chinese, the idea is probably the result of practical experience, and its embellishments the result of a certain degree of applied "Joss."

Leaving Fu-chow, good time is made until about seven miles above, when the currents become much stronger. At a picturesque bend in the river about 13 miles above Fu-chow is the city of Ning Shih. A conspicuous arched bridge at this place is a fine example of Chinese architecture. From here until Chai-pan-tsi is passed the navigation, generally speaking, is more difficult. Rocks, shingle banks, rapids and swirls have to be reckoned with, and like many other parts of the river, different water levels affect the movements and the handling of a vessel.

During low water one of the worst places on the river is the Chai-pan-tsi. A sketch of this place will tell more at a glance than could be included in a long description (see Fig. 1). The channel to the river's right bank is used until the Chungking watermark is about 10 feet above zero, when it becomes unsafe on account of rocks. Thereafter during the low water season the channel to the river's left bank must be used. It is very narrow and swift. There is probably no worse place on the upper river to meet junks, and it has been the *Monocacy's* luck to encounter them here every time she has been through except one. The best policy in a place like this, if the steamer is bound up river, is to slow and give the down-coming junks a chance to get by in safety. Up-river native crafts have had to contend with the steamer very little, and the native skippers seem to lose their heads completely when one approaches. The recently appointed and very able river inspector, Captain S. C. Plant, who has been associated with the upper Yangtse for more than 16 years, is now endeavoring to formulate certain simple and practical rules of the road for the river which will help the junk master and the steamer skipper to a better understanding of each other.

For a reliable river pilot there is nothing very difficult between Chai-pan-tsi and Chungking, at ordinary waters. At very low water the upper end of the Lo-chi shingle bank presents some difficulties due to rocks and shoal water; but by using a sounding pole a channel of sufficient depth can always be found. It is extremely difficult, however, to get a Chinese pilot to use the sounding pole. Generally speaking, he will not, if it is left to his discretion, use the pole for fear of "losing face"; and he would prefer running a ship ashore to having other river men think that he does not know the exact depth at all places and at all water levels. As a result of such stupidity many accidents have occurred. It is reported that some time ago H. M. S. *Widgeon* had her bot-

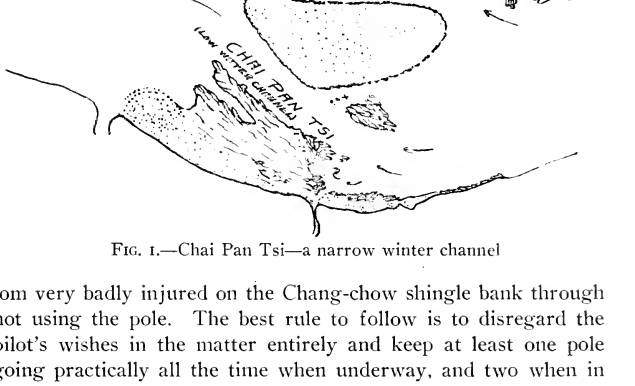


FIG. 1.—Chai Pan Tsi—a narrow winter channel

tom very badly injured on the Chang-chow shingle bank through not using the pole. The best rule to follow is to disregard the pilot's wishes in the matter entirely and keep at least one pole going practically all the time when underway, and two when in bad places.

As a vessel enters the Tung-lo-hsia Gorge the lower customs station of Chungking (Tang-chai-to) comes into view, and the weary watch-stander realizes he is at last only eight miles from his moorings. As a rule good speed is maintained, and before long Tang-chai-to and the double bend of the river are left behind, and the seven-story pagoda below the little city of Kiang-pei bursts into view. Soon then the golden Buddha is abeam on the port hand, and Chungking is actually in sight. Proceeding about a mile beyond the golden Buddha the mouth of the Kia-ling-ho

(or Little River) comes into view, indicating the dividing line between Chungking and its little sister city, Kiang-pei. As the steamer comes nearly abeam of Kiang-pei the splendid naval establishment of the French is conspicuous on the port bow. The so-called "naval barracks" are excellently located just below the junction of the Yangtse and the Kia-ling-ho. A safe natural mooring for summer and winter makes this location particularly well suited to the purpose. The "barracks" are located on a high rocky bluff overlooking the moorings. They are inclosed in a spacious compound, the stone walls of which are probably 12 to 15 feet high. Healthful, roomy quarters are provided for enlisted personnel, and a large house, furnished and equipped, is provided for officers. Reading rooms, work rooms, etc., are features of this building. It is, when one considers the thought given to these details by the French, small wonder that their officers have accomplished more in their efforts to learn the Yangtse than those of any other nation. Their surveys of the lower Yangtse waters are, of course, well known and held in high regard by all officers navigating the lower river. But their survey work in the upper Yangtse was necessarily accomplished under trying conditions; and its completeness, giving as it does a graphic representation of the river combined with detailed information obtainable on no other charts, merits unstinted praise. Besides the quarters for officers and men, the French base is equipped with machine tools, forges, etc., in sufficient detail and number to make a vessel cruising in these waters practically self-sustaining. Adjoining and under the men's quarters are a large number of storerooms. A stock of all kinds of stores is kept here so that a vessel spending a few months in the upper river is not likely to find herself embarrassed by the lack of certain necessities, her allowed stock of which has been used for proper purposes.

Proceeding a few hundred yards farther the splendid view of Chungking, its suburbs and environs, opens out before the observer. Kiang-pei, really only a walled suburb of Chungking, rises out of the river on the starboard beam, while on the port hand the extensive suburbs occupying all the river bank between Wang-kia-to and Hai-tan-shih open into view. Ahead, on a rocky promontory, rising 300 feet out of the river, is the city of Chungking, pretentious, indeed, in appearance; a veritable "Arabian Nights" city in its indefinite and, at times, almost opaque shroud of fog and smoke. There is no doubt a certain

degree of psychology connected with the mysterious, almost unnatural, feeling that comes over one when this magnificent view first comes into sight. The many junks and native boats of all kinds, the singing of the boatmen, the bustle and noise of the thousands of cargo and water coolies on shore, the (at a distance) almost sublime appearance of the city of Chungking, are in such

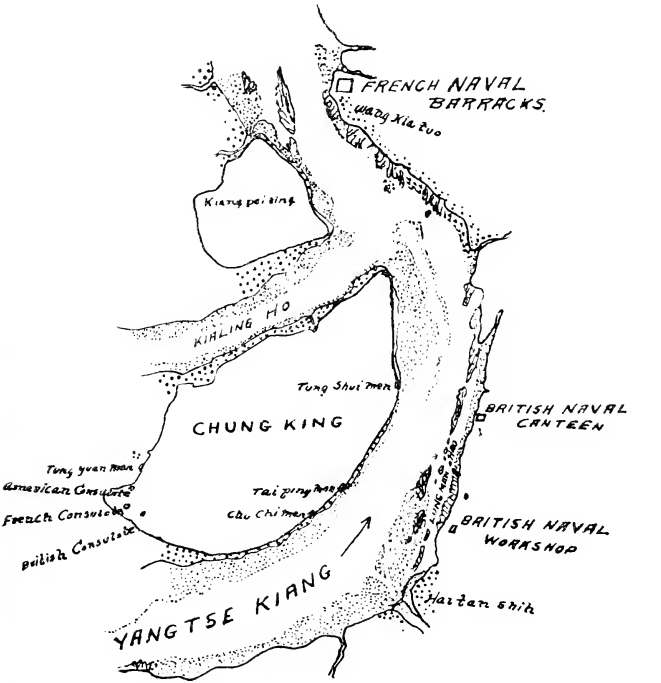


FIG. 2.—The city of Chungking

decided contrast to the wild country through which one travels after leaving Ichang that the average traveler is really overcome for the moment, and lost in admiration of this, the noblest view of purely Chinese industry in all the Yangtse River.

In general characteristics Chungking is not unlike most of the other up-river cities. It is, however, the largest and most important of these. The sketch plan will no doubt assist in making the

description more comprehensive. Between the Yangtse and its affluent, the Kia-ling-ho, is a long, fairly narrow peninsula, the lower portion of which is the site of Chungking. The population of the city is variously estimated at from 200,000 to 500,000, but there are no accurate figures obtainable. To the writer's inquiry regarding this matter, a prominent Chinese official replied that he did not know, but that he would have a census taken right away and supply the desired information. Needless to say, he was merely "saving face," and had no intention of putting his voluntary promise into execution. There is a great difference in the appearance of the city in summer and in winter, due to the variation in water level. The two principal hills upon which the city is built are all of 300 feet above the normal zero water level of the river in winter. The city is surrounded by a crenallated wall, which is said to have been built in the fourteenth century. There are eight main gates. Of those on the river, the most imporant are the Tai-ping-men, the Tung-shui-men and the Chao-tien-men. Leading up to these from the river are long flights of stone steps. Large, clumsy mailed gates guard the entrances, and these, with the exception of the Tai-ping-men, are closed and locked before sundown. Sentries representing both the commanding general and the police department flank the gates and scrutinize every parcel a Chinese carries; and woe betide the poor unfortunate who is even suspected of attempting to smuggle forbidden articles into or out of the city. The Tung-yuan-men, or West gate, is the only one of the main gates which does not open onto the river. It is the terminus of the great thoroughfare to Cheng-tu, the capital of the province. Just outside this gate is the public execution ground, and many a poor devil meets an unhappy and untimely end here. In fact, during the writer's stay in this part of China these executions were of practically daily occurrence. Sometimes a day or so passed without the curious crowd being seen on the wall overlooking the gate—its presence is always a sure sign that another victim of China's peculiar form of government was paying the penalty. Sometimes only one poor soul faced the firing squad; but frequently there were several. Many days there were 20 or more. When a large number were condemned the policy seemed to be to spread them out over several days, whether for the edification of the populace, or for the convenience of the official undertaker, it has not been ascertained. The people of the

street have been hardened to this sort of thing, though, and parties of men, women, and children are always on hand when the tragic procession arrives at the gate. Usually the condemned man is shot. Neither ammunition nor sentiment is wasted, however, for usually a single shot is fired at very close range. The victim falls and the "firing squad," consisting of about a section of infantry, enthusiastically supported by the too curious spectators, eagerly watches his death agonies until he is officially pronounced dead. Frequently this is a long time, for the Chinese soldier is none too good a shot, nor are his senses of humane treatment so highly developed that he apparently cares just where the victim is struck. Generally the attempt is made to shoot them in the chest or the back, but frequently the shot goes wide, and they start all over. The writer has seen such a case, the victim having first been hit in the arm. Execution by beheading is not common now. Only a few cases of it having occurred here during our time, but we have seen many such during our stops at Fu-chow, 65 miles down river. Although more horrible to contemplate, death by beheading as practiced in China is decidedly preferable to death before the "firing squad." The Chinese executioner is certainly an expert at his job, for it seldom takes but one quick stroke to sever the head entirely, and this without loss of time or unnecessary preliminaries, once the execution ground is reached. However, execution by beheading is looked upon as a disgrace, and as a rule only exceptionally bad robbers are beheaded. As the Chinese believe it impossible for a man to gain admittance to the next world if he is headless, the family, or some friend of a victim of the headman's axe, usually pays the few cash necessary to engage a competent and experienced tailor to sew it back in place.

But to return to the city gates. All those affording access to the river are used by innumerable water coolies, each carrying across his shoulder a pole about six feet long with a large bucket on each end. All the water of the city, for whatever purpose, is supplied this way, for there is no other water supply system, and of course no drainage nor sewerage. There is a certain amount of natural drainage, but what of the sewerage, etc., that gets out of the city is also transported by coolies through the gates and down to the river, where, as might be expected, at certain times of day the odors are anything but inviting. With conditions like these, the narrow streets are always most unsanitary. In justice to Chung-

king, though, it must be added that for Chinese streets the pavements are far above the average, and the streets proportionately very wide.

There are in the city a number of fine old temples, and to the native point of view many handsome residences. To the visitor these are not as a rule visible, for the Chinaman always surrounds his mansion with an enormous wall. Probably the real reason for this is the prevalence of robbers. The temples are practically all in a run-down condition, and like those in most parts of China, inspire little or no confidence in the present generation.

The governments of the United States, France, Great Britain, Japan, and Germany maintain consulates or vice-consulates at Chungking. Both Catholic and Protestant missions are to be found in Chungking; but aside from these and the maritime customs staff there are few foreigners there. A few firms retain European representatives, but most of them seem to depend upon Chinese agents.

The usual mode of conveyance is the sedan chair. The ordinary native chair has two bearers, but foreigners usually use four bearers. Comfortable chairs can be manufactured for about $10 to $20 (Mexican) each, depending upon the quality desired; and a team of four good coolies can be had for a total of $10 to $20 (Mexican) per month. Native ponies, too, are extensively used. It is impossible to get about any other way unless one walks, for the streets are continually crossing little rises and hills, and great stone stairways replace the paving stones of the streets at such places. This is not only true of Chungking, but of nearly all of Szechuan Province, and certainly of all the Szechuan cities I have ever seen. The way these dexterous little ponies scamper up and down the steps reminds one of the ease with which a goat would do the same thing in America. A pony trots up and down the steps with a man on his back apparently with no effort whatever. No road seems too bad for them, and no hill too steep.

Across the river from Chungking rise two ranges of hills. On these most of the foreigners have succeeded in leasing or buying enough room to build bungalows where the hot summer months may be spent. Most of these are attractively located and afford some excellent views of the river and the city. When one is reminded that in summer a temperature of 112 degrees Fahrenheit in the shade has been recorded down on the river, the necessity for the bungalows is at once apparent. On the second range the British naval authorities possess two unpretentious, but thoroughly practical, bungalows for their officers and men. Considering the country in which these up-river vessels cruise, the very limited field of pastimes open to enlisted men as well as to officers, not to mention the conditions that exist on a small gunboat during the very hot summer weather, it is a wise

policy which allows the expenditure of the small sums necessary for the equipment and maintenance of such an establishment.

Just opposite the city of Chungking, and very conspicuous from the river, the British have built a naval canteen for their men. The building is perhaps one of the best in western China, and its equipment, although not elaborate, is good, sufficient and attractive. On the lower floor are two large reading rooms and a bar, while on the second floor are a billiard room and a dining-room where good food may be had at reasonable prices. The cellar and the attic furnish excellent storeroom spaces, and quantities of surplus stores of all kinds are kept here for the two gunboats which Great Britain retains in the upper river. The fireroom forces of these vessels are natives, so that the crews of both British gunboats here do not contain as many white men as one of our vessels of the same class.

About one-half mile above the canteen the British have established a small, inexpensive, but thoroughly practical, workshop. It is equipped with forges, foundry, and sufficient machine tools to make their vessels here self-sustaining. At least one of the British gunboats now in Chungking has not been below Ichang for three years. For docking a stone grid has been laid out on the sand inside the little harbor of Lung-men-hao, and taking advantage of the several rises and falls of the river in spring, the vessels are docked and painted.

In the harbor of Lung-men-hao are the British gunboat moorings. These vessels not being in commission in the winters of 1914-1915 and 1915-1916, a mooring in here was assigned the *Monocacy*. On account of the great difference in summer and winter water levels separate moorings are required for the two seasons. When the water rises to 20 feet above the normal zero the summer moorings have to be taken up.

The total value of the trade passing through the maritime customs in 1914 was Haekwan Taels 37,632,208. Of this amount, T23,773,020 were imports, and the remainder exports. In 1915 the value of the trade was approximately 2,500,000 taels less than in 1914. Medicines, silk, wool, hides, bristles, and hemp, are the principal articles of export. The imports consist mostly of cotton and woolen goods, dyes, medicines, and illuminating oil.

There being no railroads in this part of China, and the country being extremely rugged and hilly, water communication with the outside world makes Chungking virtually the center of industry and finance for all the rich Szechuan country beyond the gorges. Many streams, affluents of the Yang-

tse, provide a means for marketing goods in Chungking. Roads, several feet wide, built above the rice paddies and cut into the sides of the hills, afford the only other means of communication between Chungking and the numerous towns and cities of this province of 40,000,000 or more souls. Vehicles on wheels cannot be used, and cargo or freight of whatever kind must be carried on coolies' backs. During the *Monocacy's* cruise in the upper river in 1914, 1915, and 1916, the brigands have been so bad that both trade and travel have been seriously interfered with. There are four or five small steamers that run between Ichang and Chungking from April until December, but their freight rates run very high, so most of the shipping is done by junks. The latter make the trip from Chungking to Ichang in five to eight days; but it takes them from one month to six weeks to make the trip up from Ichang. The risks, of course, are very great, and no insurance can be obtained.

THE PECULIARITIES OF THE UPPER YANGTSE

Ichang, distant nearly 1000 miles from the sea, is but one 134 feet above the sea level, while Chungking, although only 358 miles above Ichang on the Yangtse, is 610 feet above the sea level. In other words, between these two places there is a difference in altitude of 410 feet, or a drop in the river of about 16 inches to the mile. The statement has often been made that as one journeys through the gorges the sensation of looking down hill is experienced when looking down river, and indeed it does not seem impossible that this is no mere optical delusion when the above facts are considered.

The incline of the river bed alone is sufficient to produce a strong current throughout the year, particularly if the irregular nature of the bottom is taken into consideration. Some of the reaches, more especially those in the big gorges, are very deep, many of them having been sounded to 70 fathoms, while an abundance of shoal places produces at different levels many varieties of races and rapids, not to mention the very important effects of the innumerable ribs of rock which are so conspicuous in the low water season. But these characteristics probably hold true more or less for all mountain streams, and after all, the upper Yangtse is nothing more than a big mountain stream. Szechuan is a very mountainous region, and may boast a large number of streams. Most of these are tributaries of the Yangtse, and possessing, as they do, the usual characteristics of mountain streams, they pour their torrents into their common drain with marvelous rapidity during the heavy summer rains, which sometimes continue for several

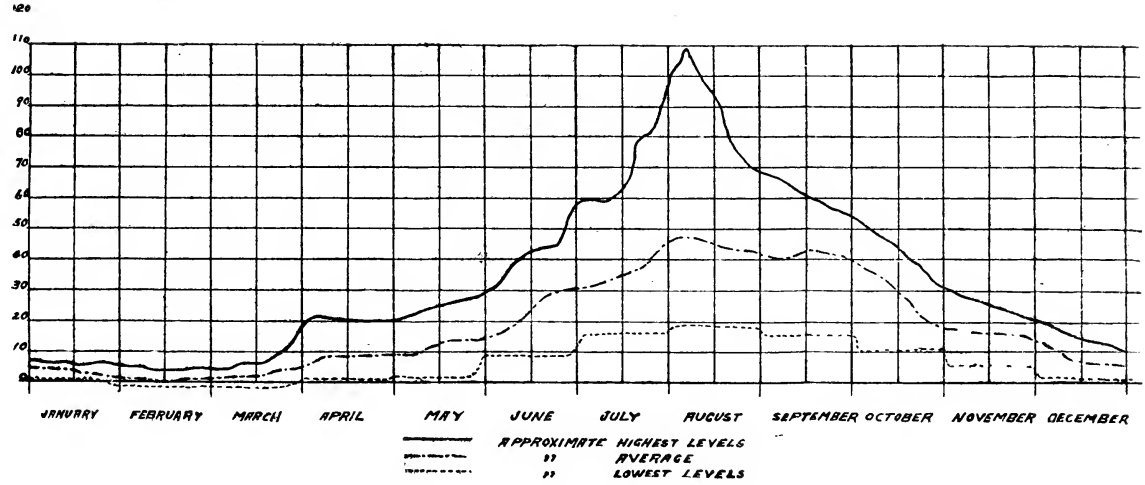


FIG. 3.—Showing variations in river level at Chungking

days. At such times the volume of water is suddenly increased to several times the normal volume of the river, and at the narrow places in the gorges the volume becomes much greater than that which the cross-sectional area of the river at such places can normally handle. This partial blocking of the stream causes what amounts to a backing up of water. The current for hundreds of miles above the gorges runs at an abnormal rate, and the river rises rapidly. It is not unusual during these freshets for the river to rise at Chungking at an average rate of one foot an hour for a total rise of 50 or more feet. In August, 1905, a rise of 80 feet in less than three days was recorded, the Chungking watermark on this occasion reaching a height of 108 feet above the normal zero. Such a rise at Chungking produces an even greater rise at Kwei-chou-fu and at Wu-shan, the cities at the heads of the two largest gorges. A rise to the 100-foot mark is not unusual at these cities during the summer.

During these freshets the river becomes a raging torrent. The current at Chungking reaches a speed of eight knots or more, and the stream becomes a mass of seething water, full of swirls and dangerous whirlpools. At such times downward bound steam vessels proceed with their schedules as far as Kwei-fu. If the water is up around the 100-foot mark at this place the navigation of the gorges below becomes most dangerous, and should not be attempted except in cases of emergency. The violence of the swirls in the gorges is almost unbelievable. They travel at varying angles across the stream, and strike everything in their paths with such force that experienced river men never, of their own volition, take chances with them. Ordinarily it is wiser to tie up and await a fall in water of several feet, and this is the usual rule. So far it has not become necessary for the *Monocacy* to attempt the gorges at such a time; but in August, 1914, the writer had the good fortune to make the trip down river in the powerful new steamship *Shu-hun* (500 tons), when the river was dangerously high. The vessel lost a day at Kwei-fu waiting for the water to fall, and entered the Bellows Gorge early the following morning. It was a splendid, and to the uninitiated, an almost terrifying sight to behold. The great rocks, so conspicuous at low and middle water, were submerged, and the water, rushing on with incredible swiftness, swirled and foamed over them. Enormous swirls with vortices several feet deep seemed to form every-

where, and rotating rapidly would go charging athwart the stream to bring themselves up violently against a cliff, a projecting rock, perhaps, or the little *Shu-hun*. It was startling to see how they literally lifted the vessel, and would drop her two, three or more points off her course in spite of all that her captain and his crew of river veterans could do. Small wonder that full speed was rung up, and less wonder still that once safely through this gorge we moored to the bank and awaited a fall in water before attempting to negotiate the narrower gorges below Wushan.

Such rises as that described above are phenomenal, and may be expected only during the period beginning in the first half of July and ending in the first half of September. While from the very nature of things the swirls and whirlpools are worst during the freshets, the rapids, as previously pointed out, are not peculiar to any season. Rapids are caused by a convergence of the stream, thus forcing the volume of water, which passes a normal section of the river at a moderate current rate, to accelerate to such an extent that the same volume will pass a reduced section in the same time. The great volume of the river is forced in from both banks, and assumes the shape of a huge cambered tongue of water with breaking edges. This water, rushing through the narrows, impinges itself on the quieter waters below, and these become distorted and break up into a mass of swirls and back water, which form the *approach*. As a rule, rapids may be divided into two general classes, namely:

(1) Those rapids formed by land slides, or formed just below the mouths of gullies which, when freshening, eject stones, pebbles, and silt into the main stream, thus in time forming a bank which gradually partially blocks the flow of the stream and fills in the bed of the river to such an extent that there is a great difference in the depth of water in and below the rapid, and just above it; and

(2) Those rapids which are caused by a narrowing of the stream, and in which the depths are not appreciably different from the water immediately above them.

The Ye-tan is an excellent example of the first type. Here the great boulder bank extends out over halfway across the river, and the depth of water in the rapid is 8 to 10 feet less than it is just above it. This type of rapid is essentially a low or middle water rapid, for when the water rises, and the bank causing the

rapid is well under cover, the added cross-sectional area is sufficient to take care of the additional volume of water, and a few swirls and whirlpools will probably be the only evidence of a ferocious low water rapid. These banks vary in height and in width. This, together with the fact that the rapid varies in strength and permanence, according to the difference in the level of the river above and just below the rapid, explains the reason why all rapids of this kind are not at their worst at the same standard watermark of the nearest port.

Of the second type probably the best example is the Hu-tan. At low water it is nothing, but as the river rises it increases proportionately in strength. Finally, as mentioned above, when the local watermark is about 60 feet above zero it is at its worst. The high rocky banks of this narrow stretch confine an enormous volume of water to this one passage, and conditions do not improve until the river rises still higher and overflows the walls of this rocky funnel, or falls sufficiently to readjust the relative cross-sectional areas in the rapid and just above it to figures more nearly the same.

Races are plentiful in the Yangtse, but to the steam vessel they present no special difficulties. The distinguishing feature between races and rapids is that races do not assume the form of a tongue. They are usually formed by shoals or reefs, and are most in evidence during the low water season.

Swirls are encountered at all water levels, but they do not assume dangerous proportions except at high water. They will always be found in the approach to rapids, but at normal water levels a veteran pilot knows just about how to expect them. The high water swirls present a different proposition. They are found to be worst in irregular rocky localities, or in reaches where the contour of the river banks is irregular. They are caused by the projection of many rocks which form small bays. The down-coming water drives into these with the full force of the current, and in so doing drives out *against* the current the water which was in these little bays. This latter strikes the main stream at an angle and assumes a circular form. If the force behind it is great it develops characteristics not unlike miniature storms. In high water these become violent, as pointed out above, and their vortices are often several feet deep. The running swirls, or oversets, known to the Chinese as *pao-hsuen,* are to be found, more or

less, in all the turbulent reaches during high water. They are different from the ordinary swirl inasmuch as they appear to be volumes of water shot up from the bottom, which, upon reaching the surface, break into great "boils," and the whole mass of water sets rapidly in one direction or another. When the river is high and fresheting these are very conspicuous in the Bellows Gorge and in the Wushan Gorge. They constitute a decided menace to junk navigation. While only such swirls as those just mentioned attract any special attention, they are in reality very numerous in all the upper river. The strong waters impinge against the rocky banks, and innumerable small swirls, usually only a few inches in diameter, are formed. The presence of these is believed to account for the fact that no matter how hard the wind blows practically no waves are produced, and the surface of the water normally is smooth. The old adage, "It is an ill wind that blows no man good," applies forcibly in this case; for while the swirl at certain stages of the river is a menace to steam navigation, and while it takes a heavy toll of celestials every year, its "calming" effect upon the waters saves many disasters. Very strong winds frequently blow in the winter time, particularly so in the gorges. If these caused a sea which compared favorably with what a less violent wind will cause in the river below Ichang many disasters would occur, and an entirely different type of native boat would have to be used.

The whirlpools of the upper Yangtse are no different from the familiar type. They are not dangerous except at high water. They form where two streams join, or where a continuous and extensive back water joins with a portion of the main stream to form a great revolving circle of water. At high water the whirlpool formed at the junction of the Yangtse and the Kia-ling-Kiang is very dangerous. It is said in Chungking that junks of 70 tons displacement have been sucked down here, but this report has not been verified. One of the most troublesome whirlpools for junks is only a few miles below Fu-chow. On one side of the river is the down-going current, and on the other the back current, which on the surface appears to be almost as strong as the down-going. It is caused by the peculiar rock formations of this locality. It is not unusual for junks to spend a whole day trying to get out of this whirlpool.

Among the other dangers of the upper Yangtse are the fogs. The winter months, particularly November and December, are the worst times for these. They seem to be most prevalent between Kwei-fu and Ichang, though sufficiently bad above Wanhsien to stop all traffic at times. It would be sheer madness to attempt to run in the upper river during a fog; but in spite of all caution vessels are frequently caught by fogs in places where continuing on their way invites almost certain disaster, and mooring presents many dangers. The Yao-tsa-ho, for example, is most dangerous in this respect. The rocky winding river between Shih-pao-tsai and Chung-chou is also a bad place to be caught by a fog. During the time of the year that fogs are most prevalent a good general rule is not to get underway before ten in the morning if there is any chance of a fog shutting down.

Probably the one thing that causes the greatest anxiety for steamers at all seasons is the junk traffic. Certainly 75 per cent of the hairbreadth escapes of downward bound steamers are due to encountering downward bound junks in narrow channels, or in turbulent reaches. If there is imminent danger on account of junks ahead in a narrow channel, the best procedure is to turn around and head up stream until the channel is clear, and then proceed. Such cases are easily handled; but to encounter junks in long turbulent reaches, such as the Niu-kou reach, the Yao-tsa-ho, or in the gorges during rising middle water, or high water, is a different proposition. There can be but one hard and fast rule for the downward bound steamer under such conditions, and this is that some way, somehow, the steamer *must keep clear*. The cumbersome, unwieldy-looking junks are practically at the mercy of the current and swirls, which at any instant may throw them athwart the steamer's course, regardless of which side she chooses to pass on. The Chinese pilot usually knows the tendency of the swirls to set to right or left in any locality, but the river frequently fools the best of them. Probably the best procedure in such a case is to watch for a favorable opportunity and then put on all possible speed in order to pass the danger as quickly as possible. Under some circumstances it is safer to follow up a junk right astern, and then when fairly close up to him, make a break for the most favorable side and pass him as soon as possible. It is a wise precaution to always keep a couple of small semaphore flags on

the bridge and, by waving one of these from the bridge end, indicate to the junk the direction you wish him to take. These observations, however, are quite general at best, for, after all, such cases resolve themselves into matters of judgment, decision, and prompt execution on the part of the skipper.

With conditions like those briefly described above, it is apparent that the methods employed differ somewhat from those ordinarily practised in maritime ports and in deep-sea cruising. The upper Yangtse, in fact, may be said to have a seamanship, a river art, all its own. Anyone who witnesses the masterly handling of a small river steamer in one of the Yangtse rapids has abundant proof of this statement. Vessels do not anchor in the upper Yangtse—they moor. There are a variety of moorings with which the river skipper must be familiar, for not only do the conditions differ from place to place, but the conditions at the same place may vary considerably during a rise or fall of 20 feet or less. The best of the native pilots still retain a degree of their " junk " ideas, and this applies particularly to the question of mooring places. Experience has demonstrated, too, that in grave emergencies, such as a bad entry to a rapid, the Chinese pilot, figuratively speaking, " blows up." It therefore behooves him who would handle his vessel with intelligence, and indeed with safety, to make a study of the conditions before attempting the trip up from Ichang, no matter how good his pilot may be. An officer in command of a naval vessel should, upon approaching a mooring place, take the con himself, and assume direct charge of the mooring operation, asking, of course, his pilot's advice, learning all he can from his (the pilot's) experience, but using his own judgment regarding the details and their execution.

The confused mass of turbulent water, made up principally of swirls and back water, which is encountered more or less at the *foot of every rapid* comprises what is termed the *approach*. Although alike in many respects, approaches have their individual peculiarities. It may safely be said that owing to the difficulty in bringing a vessel through the swirls and up to the *rapid point* the approach presents dangers equally as great to the steamer as does the rapid itself. Most approaches have a right and a wrong side. In many cases one side may be foul, and in many others the strong down-coming currents set up swirls and eddies which set

directly onto the rocky banks. This is shown in the diagram, Fig. 4.

The method which we usually employ upon approaching a strong rapid is about as follows: Notify engine rooms and fire rooms about 15 minutes before the rapid is to be steamed, and tell

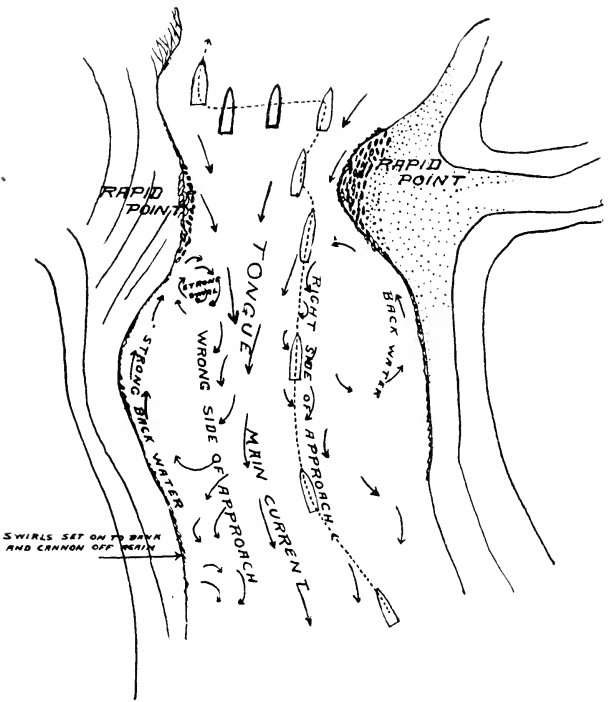


Fig. 4.—Showing rapid points, the approach, and steamer's track

them about what speed will be required. When the rapid is in sight, size up the situation, and give engine rooms and fire rooms such additional information as seems advisable. For example, it often happens that upon approaching a rapid it is apparent that full speed will not be needed; or that nothing above 300 R.P.M. will be required; or that all possible speed will be required, etc.

When entering the approach the engine rooms are usually given a "stand-by" signal. The vessel is carefully piloted through the approach just in the swirly broken water between the tongue and the back water. As the point of entering the rapid is approached full speed is rung up. Great care and skill, which only long experience can give, are necessary here in order to avoid the back water, and at the same time keep clear of the strong down-coming current until the vessel is as near as practicable to the *rapid point*. Then she is eased over into the rapid so as to meet the rush of water as nearly head-on as possible. Once in the tongue the confusion and noise of the water, so characteristic of the approach, ceases and the vessel steams her utmost in the smooth swift waters of the tongue. In the meantime we watch with more or less anxiety (its degree depending upon the strength of the rapid) ranges which we pick up on shore to note whether or not the ship loses her headway. In the *Monocacy* the first "full speed" signal is answered by speeding up the engines to 300 R.P.M. Then, when the vessel has entered the tongue, if she fails to forge ahead, full speed is rung up once more, and the engines are forced to 325 R.P.M. If this fails to get her over the top of the rapid, a third full speed is rung up, and the engines are given full boiler pressure. The two points on either bank which form the rapid are known as the *rapid points*. Where the approach will safely permit, the best practice sanctions entering the rapid as close as practicable to the *rapid point* farthest up river. Then if, when the vessel enters the rapid, she keeps the current slightly on her near shore bow she goes slowly across toward the *rapid point* on the opposite side. If this *rapid point* is slightly below that of the entering side, and if the vessel has not lost too much ground in crossing over, she will, upon reaching the opposite bank, be above the *rapid point* on that side, and consequently over the worst part of the rapid. Where the *rapid points* are about opposite each other crossing over will seldom be of much benefit, and rapids so formed are frequently unsteamable for vessels of less than 14 knots speed. In strong rapids the *Monocacy* usually loses all but the least perceptible speed over the ground, but only once in the writer's experience have ranges indicated that she was losing ground. Then gradually, as the vessel nears the opposite bank, having weathered the *rapid point* on that side, or as she bucks her way right into the teeth of it, the top of the rapid is made, and an increase in speed is at once apparent.

A moment later normal cruising speed—usually about 260 R.P.M.—is resumed, and the rapid lies behind us. Usually full speed is not required for more than 10 minutes at a time.

The greatest care must be exercised upon entering a rapid. A sheer over so as to get the down-coming currents well on one bow means almost certain disaster. The diagrams shown under Figs. 5 and 6 are self-explanatory. A sheer out of the narrow neutral zone of swirly water which lies between the tongue and the back water will throw the bow into the tongue and the stern into the back water. A strong force is exerted on the bow, and the effect of back water renders the rudders useless. The bow is thrown violently athwart the rapid by the down-coming waters, and the effect of the back water is to push the stern up stream. If a vessel gets into such a predicament, the only course to follow is to back full speed immediately and put rudders amidships. Then if the river dragon smiles upon you, and your vessel's bow is not smashed into the rocks on the opposite side of the river at the foot of the rapid, watch for a favorable opportunity to straighten out, heading either up river or down river, taking advantage of whichever way the swirls happen to throw your vessel. A British gunboat had a narrow escape at the Niu-kou-tan in just such a manner. She took a sheer, and before her engines could take effect she had been swept down and across the river, and her bow was smashed into the rocks. A German gunboat had a similar experience at the Pao-tse-tan; and several other vessels have had narrow escapes.

So far it has never become necessary for the *Monocacy* to get out a wire to assist her over a rapid. As this evolution forms an important part in river seamanship its omission is not believed advisable. Captain S. C. Plant, river inspector for the upper Yangtse, has very kindly authorized the following description and attendant figure. On account of his vast experience in this kind of work, his remarks on the subject may be considered authoritative:

When there is a doubt as to whether or not the vessel will be able to steam the rapid the wire hawser should be laid out beforehand, because in many instances it is both dangerous and difficult to *back out* of a rapid after once having entered it. . . . . It is when the vessel is *in the tongue* that the hawser (if necessary) must be got on board. In order to accomplish this it is necessary to *edge* the ship as close into the *point* as her draft will permit, so that a boat (already stationed there) can put off to the

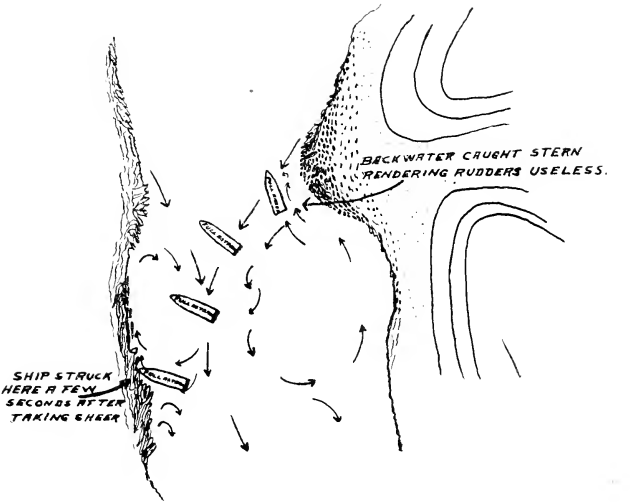


FIG. 5.—Showing accident that happened to a steamer through taking a sheer upon entering a rapid

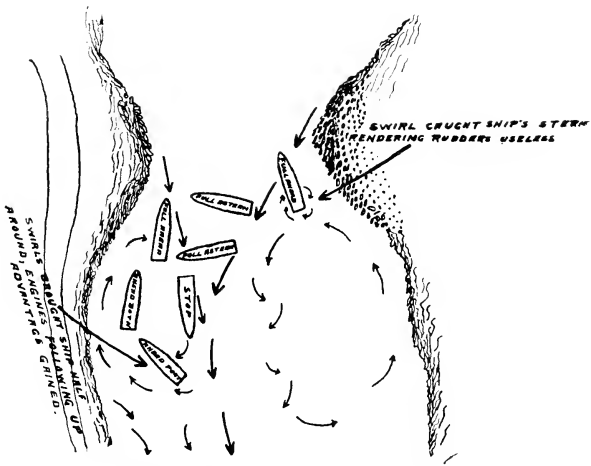


FIG. 6.—Showing narrow escape of a steamer in a rapid

steamer with the line by which means the end of the wire hawser is brought on board. To get the hawser on board, taut, and fair leading, is generally very troublesome, especially when the vessel's draft is more than three to four feet, and when the nature of the rapid necessitates a very long stretch of wire. The difficulty is to keep it from fouling submerged rocks and boulders, and care should be taken to buoy it at intervals, where practicable, with sampans, which can be cast off as the wire becomes taut and leading ahead.

Perhaps everyone who comes to the upper Yangtse wonders why vessels designed specially for this work are not built with greater power. In the first place there are practical limits to length and draft, and since these largely limit tonnage, they govern the weight of machinery which can be installed. A merchant vessel, which will run only in the high and middle water seasons, may safely have a length of 200 feet of a little more; but a gunboat, which in emergencies may be required to take her chances with the river at any stage of the water, should not be over 175 feet long. There are many tortuous channels at low water, and some of the turns are very sharp. Furthermore, at all levels a good pilot usually hugs the favorable bank as closely as he safely can so as to avoid as much strong water as possible. With the more or less irregular banks, and the many small bays which offer perhaps a little back water (and the up-river pilot always takes advantage of them), a very varied course is steered. All up-river vessels are necessarily equipped with two to four rudders in multiple. Consequently, when the helm is put over five or ten degrees the stern is literally pushed to one side. This introduces another element of danger. The best native pilot (and there are no foreign pilots) knows considerably more about junks than he does about steamers, and the up-river junk is steered mostly by a long, cumbersome-looking steering oar, which runs straight out ahead. They average about 60 to 75 feet in length. The result is that when he has been educated up to steamer work he often fails to bear in mind the characteristic noted above, and pilots the ship as if she had only one end. As might be expected, a number of vessels have had narrow escapes due to their sterns having "side-swiped" the rocks. At least one foreign gunboat was damaged by an accident of this kind. The writer has on two occasions had to make a quick shift of helm in order to avoid almost certain collision in this way.

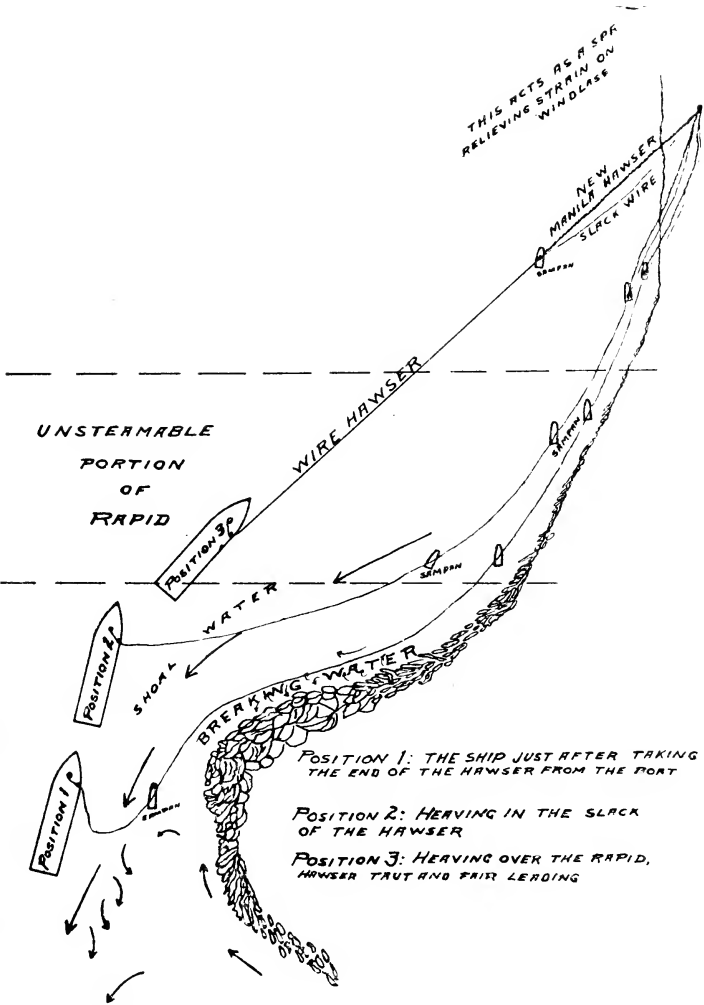


FIG. 7.—Showing disposition of line for heaving over a rapid

In the low water of winter soundings of five feet may be obtained before the rapids are bad enough to make navigation impracticable. Also in the approach to rapids, even in summer, the bank will be skirted very closely so as to get as near up as possible to the "rapid point" before entering and, in this way, soundings of six or seven feet are obtainable. A river steamer's draft must, of course, be limited primarily by the depth of water in which she will steam; but for an up-river vessel the characteristics of the water through which she must steam also form an important consideration. The most efficient type of vessel is that employing a spoon-shaped bow, the effect of which is to present a smooth, rounded, and as nearly horizontal surface as possible to the water. The greater the draft the greater the angle of the spoon-bow to the horizontal. A proportionate increase in resistance results, and a draft of more than four and one-half to five feet will counteract the benefits of an otherwise excellent bow design. The idea of the spoon-bow is to reduce to a minimum the effects of sudden strong currents which are encountered at a slight angle to the vessel's course. By presenting a fairly smooth, well-inclined surface to the rush of the current instead of a sharp stem with the ordinary bow lines, steering is greatly facilitated and the strain on the vessel greatly reduced, due primarily to its tendency to ride up and over the new force. If the water be strong and swirly and the vessel of light draft and good general design its effect will not cause any particular worry, because the water really has no chance to "get a hold" on the vessel. Take, for example, the navy standard design 21-foot motor dory, with which the *Monocacy* was originally equipped, and the specially designed motor sampan, with which she is now equipped. The former gave excellent service in the lower river, and upon arrival in Chungking it was hoisted out and put into sirvice; but not for long. After one or two trips to the shore had been attempted with this boat we considered ourselves lucky that no serious accident had occurred, and put it out of use permanently. On the other hand, the motor sampan, of practically the same length as the motor dory, takes races and rapids and goes straight through a swirl that would throw the motor dory eight points off her course. To anyone familiar with the Yangtse Kiang sampan, with its flat curved bow and its light draft, the analogy between such a craft and the well-designed river steamer is obvious. The steamer's frames and plates must

be of the lightest possible material consistent with the required strength. Machinery must be light and high powered. In fact, lightness combined with maximum strength should preponderate over all other considerations. In order that the propellers may not increase the draft they should work in tunnels, and should be able to drive the vessel, without undue forcing, at 14 knots. The spoon-bow and the tunnelled flat bottom of the modern light steamer are eloquent tributes to the craft of the river men as evidenced in the original ideas so conspicuous in their small boats. Considering these facts, it is no wonder that until comparatively recently vessels suitable for such waters have not been built.

Moorings in the upper Yangtse may for convenience be divided into two general classes, namely: (1) Those in which anchors are not used; and (2) those in which one or more anchors are used. For mooring purposes all vessels should be equipped with two sampans of the native type, and a crew of natives should be employed to operate them. The *Monocacy* has two such boats, and employs five experienced river men. High-grade, flexible galvanized steel wire line, one and one-half inches or two inches in circumference, depending upon the circumstances, is also an essential part of the equipment. It should be carried on portable reels, at least one length of which should contain not less than 150 fathoms. Mooring pegs four feet long and three inches in diameter, mauls for driving the pegs, and coir line, furnish the other essentials. Mooring in bays of quiet, slack, or back water, should be avoided unless the locality is well known. Such places look most tempting; but in many instances rocks or ledges of reef lurk a foot or so beneath the surface, and give no evidence of their whereabouts. It is a good general rule to moor only in places where there is sufficient down-stream current to give some indication of submerged rocks near the surface. In unfamiliar localities it is best to select a mooring place well before dark and tie up securely for the night. The Chinese pilot is prone to run on, if it suits him, until twilight, and then present you with the proposition of making fast at dusk at a poor mooring place. Almost surely your lines will foul submerged rocks, the ship will yaw all out of your calculations, and you will find yourself wishing you had tied up at some good place, probably only a few miles back.

Assume first a mooring place on the port bow where the current is slow from ahead, the bottom and the beach sandy. Forward

in a convenient position a reel of one and one-half inch wire has been placed, and a light boom, with a tail snatch-block rigged, has been lashed to a stanchion about 30 feet from the bow. The wire is rove through the snatch-block, and the snatch-block is then hauled up to the top of the extension boom so that it is as high as practicable above the water. About 15 to 20 fathoms of the wire are unreeled and coiled down on the deck, under and over fashion so as to not kink. Steam is gotten on the anchor engine, stern anchor is made ready for going over the side, stern lines are in readiness and, other preparations being completed, the vessel is ready for mooring. About one-half to one-quarter mile below the mooring, speed is reduced to one-third, and sampans are manned. When the vessel has lost sufficient headway to permit it, sampans are lowered, the port one hauling quickly forward and taking on board the coil of wire and the "peg party." This latter consists of three men equipped with two wooden mauls and usually four to six pegs. The starboard sampan in the meantime drops back on the quarter, takes stern anchor on board and awaits orders. When abreast the mooring place, and when the vessel is the proper distance off shore, let go the starboard anchor and shove off port sampan with the peg party and wire. The lead of this wire being through the elevated snatch-block, it is payed out carefully from the deck, and kept out of contact with the water as long as possible. In this way the sampan is usually fairly close to the shore before it has to work against the force exerted by the current on the wire. Having landed well up on the bow, the peg party takes the wire ahead until told to make fast. One peg is driven, a turn taken with the wire and the ship signalled to that effect. Meanwhile chain has been veered, and by using the rudders the vessel has eased closer in shore. The snatch-block is lowered away, the wire given a fair lead and taken to the capstan, and a strain gradually taken. When the vessel has gone astern sufficiently to get the anchor bearing properly on the bow, the stern anchor is taken out, probably 30 to 50 feet, and let go. A bow and stern breast, a spring from forward, and an additional double lead of wire on the bow, with double pegs, complete the mooring. In case the stern is found to be in back water—a frequent occurrence—the stern anchor is let go from deck so as to keep the stern from swinging too close in shore.

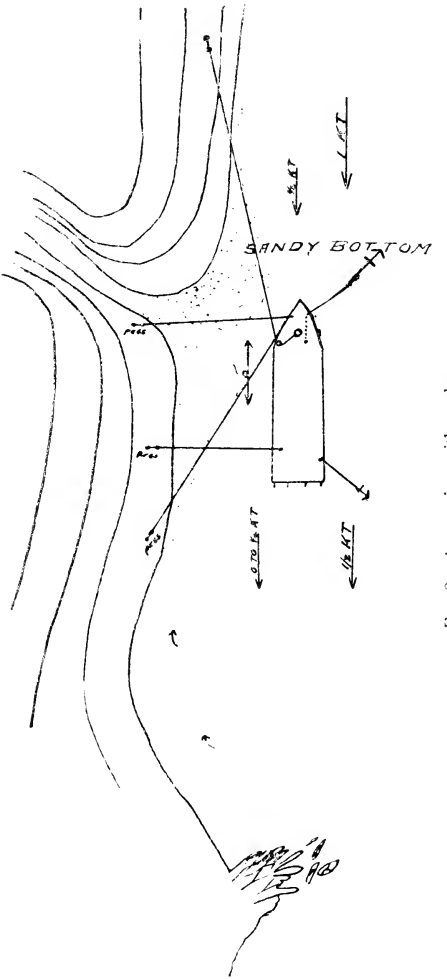


FIG. 8.—A mooring with anchors

Variations from this are moorings made in slack water, when the vessel should be backed full speed until sufficient chain is veered and the stern anchor let go; and moorings where rocks or trees may be used for making fast the mooring lines. It sometimes happens, too, that even with an anchor down a vessel moors close to a steep bank. In this case mooring poles, of the type described below, are used to shore the vessel off.

There are many mooring places in the upper Yangtse where it is not practicable to let go an anchor. For example, the writer has, on several occasions, found it necessary to moor in the big gorges, or in some rocky reach where letting go an anchor would have meant its certain loss, and a complication in an evolution which otherwise might be considered fairly simple. In the gorges the water is too deep to even consider the use of an anchor, and in numerous other localities rocks and boulders abound in such quantity that the recovery of an anchor would be too much to hope for. In such places vessels moor to the bank by using lines and mooring poles. The lines employed are the same as those described above. The poles are usually of some tough, well-seasoned native wood, and are about 30 feet in length. Every up-river vessel should be equipped with at least three of these. When underway two such poles, one aft and one forward, should always be ready for instant use.

Assume a mooring place on the starboard side, located in a deep, rocky gorge, with broken, uneven shore line, and an in-shore current of two knots, vessel bound up river. Prepare wire on starboard side exactly as described above for use with anchor moorings. Lay poles athwart-ships, one forward and one aft, and rig two small tackles from each pole-head, leading at an angle of about 30 degrees, to eye-bolts forward and aft of the pole and well outboard. Approach the mooring with only enough speed to insure good control. Lower starboard sampan, haul forward, and transfer the wire and men composing peg party to it. Work the ship a little above the point where sampan has instructions to land and as close in shore as safe handling will permit. Shove off sampan, paying out wire with great care, taking pains not to unnecessarily impede the progress of the sampan and at the same time keeping the wire clear of the water as long as practicable. Meanwhile stop the off-shore (in this case, port) engine, and allow the current to force the vessel slowly astern against the power of the

slow-running in-shore (starboard) engine, thus insuring perfect control of the vessel. Continue to handle the vessel in this way, increasing or decreasing the speed a little as may be necessary, but keeping the vessel in the desired locality until the wire has been made fast to some previously designated rock. Take the wire to the capstan, and having worked the vessel abreast the position where it is desired to moor her, gradually take a strain. The greatest importance is attached to the lead of this wire. If it is led from too far forward the head of the vessel is pulled in shore as soon as a strain is taken. When the *Monocacy* first came up river there was no alternative but to lead a wire of this kind from too far forward. As a result we considered ourselves lucky, when making such a mooring in the Wushan Gorge, that the vessel did

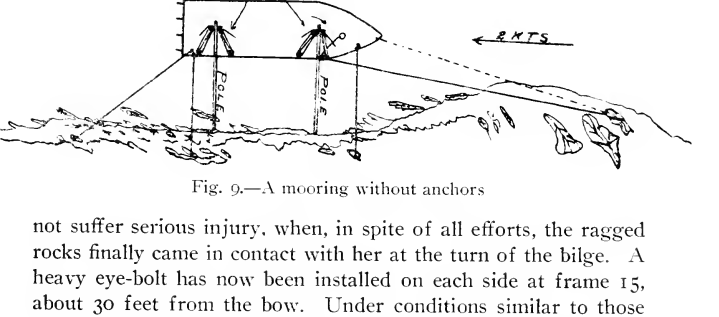


Fig. 9.—A mooring without anchors

not suffer serious injury, when, in spite of all efforts, the ragged rocks finally came in contact with her at the turn of the bilge. A heavy eye-bolt has now been installed on each side at frame 15, about 30 feet from the bow. Under conditions similar to those described above the vessel can be (and has been) worked in shore or off shore under perfect control. Using the rudders, capstan, and engines, the vessel is now worked slowly in shore, care being taken not to give her a decided sheer either way. The order is then given to "point the poles," and they are shoved out 12 or 15 feet over the side, the head tackles being tautened up so as to control them. Quartermasters having graduated sounding poles and stationed forward and aft give warning as the vessel slowly comes in toward the bank, and if a sounding of less than 12 feet is found it is best to "out poles" and hold her off until the water all along the ship's side can be sounded for rocks, which

might be only a foot or so under cover. Meanwhile breast lines have been run ashore forward and aft, and a spring or quarter-line gotten out as a precautionary measure in case of a slight back water close in shore. Let the vessel come well in, if there is sufficient water. Then when all lines are made fast and the poles well set, breast out 12 or 15 feet from the bank and tauten up the moor. As a precautionary measure, the line on the bow should be doubled before engines are secured. To get underway from this mooring, the bow line should be singled, and all other lines taken in. Breast well off with poles, but if possible breast the bow out a little more than the stern. Give the vessel a little left rudder, and ease the bow line slightly. This allows the current to catch the vessel on the in-shore bow. As soon as she eases out sufficiently to take the strain off the poles take them in. Then with the vessel headed slightly off shore, ease rudders amidships and ring up one-third speed. When the stern is clear of the rocks the party ashore may be ordered to cast off the bow line. Straighten the vessel out with engines and rudders, and handle her in this position until the bow line is aboard, the shore party returned, and the boat clear of the water.

While as a general rule absence from the larger units for any length of time is hardly advisable for a naval officer, there can be no doubt that experiences of a most valuable character may be had in these waters. To anyone, whether he be landsman or seaman, the upper Yangtse is most interesting; but to one accustomed to large ships and to the methods of deep water, the attractions of this wonderful stream may easily become a fascination, the charms of which are so great that they outweigh in importance the discomforts that one must endure, the risks one must necessarily incur, and the region in which one must exist.

U. S. NAVAL INSTITUTE

SECRETARY'S NOTES

Growth and Support

If it is granted that the Institute is fulfilling—even to a slight degree—its object of advancing professional, literary and scientific knowledge in the navy, then it must also be granted that the obligation of every one in the service to become an active supporting member is undeniable.

The reason then that the Institute needs all the support the service can give is a more weighty one for becoming a member than is the consideration of individual benefit received from the receipt of the PROCEEDINGS and Institute publications.

The Institute aims to present material which is for the general interest and education of every one in the naval service, the militia, the coastguard, the reserve, and the body of civilians interested in the service. The Institute's increased support must come from the following sources:

The commissioned personnel of the navy and marine corps as regular members,

The enlisted men of the regular service, who may become subscribers, the subscription being the same as dues for members,

The coast guard, naval militia and naval reserve, members of which may become associate members, and

Civilians interested in naval subjects, the development and expansion of the naval service, who may become associate members.

Members and subscribers are, therefore, earnestly urged to lend an active hand towards the expansion of the Institute:

(a) By bringing the benefits of membership before those entitled to become members, and in recommending the PROCEEDINGS to such of their friends as are interested in the navy.

(b) By giving the Institute the benefit of articles, professional notes, experiences, and illustrations, and by recommending that others do so.

(c) By making use of the book department of the Institute, and in suggesting its use as well as the use of the information bureau to others.

(d) By patronizing the advertisers who show their interest in the Institute and the service by helping to carry the former; mentioning the Institute in answering advertisements; and recommending the Institute to advertisers.

Important Notice

The Board of Control on the occasion of its December meeting decided to grant to enlisted men the privilege of purchasing the Institute's publications on the same terms as are extended to the midshipmen at the Naval Academy. On all orders for ten or more copies of the same publication and on all orders amounting to $10 the price charged will be the same as that charged by the midshipmen's storekeeper, plus carriage.

Officers of the fleet and training stations—especially division officers—are requested to keep their men informed as to the benefits to be derived from subscriptions to the Institute, from its publications, and from its book department.

Suggestions Invited

Comment and suggestions relative to the make-up of the PROCEEDINGS are invited from all members interested in the welfare of the Institute. It is believed that the scope of usefulness of the PROCEEDINGS to members can be increased and all members are invited to assist in this work. Should any topic, on which you think an article could well be written, occur to you, send it to the Secretary and Treasurer, together with such explanation or comment as may appear desirable in order that the intent of the suggestion may be clearly understood. The Institute is desirous of obtaining good "sea yarns" for publication. It is hoped that any one who can spin such a yarn will submit it.

Membership

Since December 19, 1916, 24 regular and 38 associate members have joined the Institute.

The following members have died:

The Admiral of the Navy, George Dewey, Jan. 16, 1917.
Captain C. G. Calkins, U. S. Navy (retired), Dec. 20, 1916.
Civil Engineer A. C. Cunningham, U. S. Navy, Jan. 13, 1917.
Mr. W. S. McGunnegle, Nov. 15, 1916.

Club Rates Discontinued

The arrangement for club rates existing between the Journal of the U. S. Artillery and the U. S. Naval Institute has been terminated by mutual agreement. All subscriptions taken out under the club-rate arrangement will continue in effect.

Civilian Training Cruise

The publication of the article on the Civilian's Training Cruise, 1916, by Lieut. Commander W. B. Tardy, U. S. Navy, announced to appear in this number has been unavoidably delayed. It will appear in the March issue of the PROCEEDINGS.

Bureau of Information

The Institute offers its services as a "Bureau of Information" on professional questions and will endeavor to obtain replies from the best qualified sources. Those "Questions and Answers" which are suitable for purposes of general information, will appear in the PROCEEDINGS. It is suggested that knotty questions which come up in professional examinations for promotion may well be submitted to this department.

Book Department

The Institute Book Department will supply any obtainable book, of any kind, at retail price, postage prepaid. The trouble saved the purchaser through having one source of supply for all books, should be considered. The cost will not be greater and sometimes less than when obtained from dealers. Bills will be rendered upon delivery of books.

Professional Books

The Book Department is compiling a list of professional books by subjects, and is prepared to submit lists of standard works to members and subscribers desiring such information. Lists of these books will be published from time to time.

Illustrations

Authors of articles submitted are urged to furnish with their manuscript any illustrations they may have in their possession for such articles. The Institute will gladly co-operate in obtaining such illustrations as may be suggested by authors.

Original photographs of objects and events which may be of interest to our readers are also desired, and members who have opportunities to obtain such photographs are requested to secure them for the Institute.

Annual Dues

The annual dues for 1917 become payable on January 1, 1917. It is suggested that dues be paid in lump sums covering a period of two to five years; this method of payment has advantages for members as well as for the Institute and is practiced by a number of members, both regular and associate. Response to this notice will save the Institute a considerable sum in stationery and postage.

Notice

Whole Nos. 145, 146, 147, 149 and 155 of the PROCEEDINGS (March, 1913, June, 1913, September, 1913, January-February, 1914, and January-February, 1915) are exhausted; there are so many calls for single copies of these numbers that the Institute offers to pay for copies thereof returned in good condition at the rate of 25 cents per copy.

Address of Members

Members, especially those on the retired list, and civilians are urged to keep the Secretary and Treasurer informed of the address to which PROCEEDINGS are to be sent, and thus insure their receipt.

Non-receipt of Proceedings

Members and subscribers are urged to notify the Secretary and Treasurer promptly of the non-receipt of PROCEEDINGS, in order that tracers may be started. The issue is completed by the 10th of each month.

Reprints of Articles

The attention of authors of articles is called to the fact that the cost to them of reprints other than the usual number furnished, can be greatly reduced if the reprints are struck off while the article is in press. They are requested to notify the Secretary and Treasurer of the number of reprints desired when the article is submitted. Twenty copies of reprints are furnished authors free of charge.

Notice to Newsdealers

The discount to newsdealers is now 10 per cent, instead of the 25 per cent heretofore allowed on subscriptions.

ANNAPOLIS, MD., January 18, 1917.

INFORMATION INDEX

UNITED STATES NAVAL INSTITUTE, ANNAPOLIS, MD.

REPORT OF AUDIT FOR THE YEAR ENDED DECEMBER 30, 1916

BALTIMORE, MARYLAND, January 5, 1917.

TO THE OFFICERS AND MEMBERS OF THE UNITED STATES NAVAL INSTITUTE, ANNAPOLIS, MARYLAND.

Gentlemen:—In accordance with engagement we have audited the books, etc. of the *United States Naval Institute, Annapolis, Maryland*, for the year ended December 30, 1916, and submit herewith a certificate, and the following exhibits:

Exhibit A.—Financial statement as of December 30, 1916.

Exhibit B.—Statement of cash receipts and disbursements for the year ended December 30, 1916.

Exhibit C.—Investments (bonds, etc.).

Exhibit D.—Accounts receivable.

Exhibit E.—Accounts payable all as of December 30, 1916.

Exhibit F.—Statement of income and expenses for the year ended December 30, 1916.

Respectfully yours,
BLACK AND COMPANY,
By WILMER BLACK, C. P. A.
Certified Public Accountants.

UNITED STATES NAVAL INSTITUTE, ANNAPOLIS, MARYLAND

CERTIFICATE

We have audited the books, etc. of the *United States Naval Institute, Annapolis, Maryland*, for the year ended *December 30, 1916*, and

We hereby certify that the accompanying *financial statement* and *statement* of *income* and *expenses* are correct; and, in our opinion, set forth the true financial condition and result of operations for the year, respectively, as disclosed by the books of account.

BLACK AND COMPANY,
By WILMER BLACK, C. P. A.
Certified Public Accountants.

Baltimore, Maryland, January 5, 1917.

EXHIBIT A

FINANCIAL STATEMENT, DECEMBER 30, 1916

ASSETS

Current Assets.		
Cash (in bank), Exhibit B.....	$20,364.54	
Investments, Exhibit C.....	56,000.00	
Accounts receivable, Exhibit D.....	2,939.48	
Certified checks.....	15.00	
Inventory, December 30, 1916 (as taken by yourselves)	7,312.58	
Total current assets.....		$86,631.60
Balance	$80,778.96	
Furniture and *Fixtures*.....	400.00	
		$81.178.96

LIABILITIES

Current Liabilities.		
Accounts payable, Exhibit E.....	$ 5,852.64	
Total current liabilities.....		$ 5,852.64
Balance (excess of current assets over current liabilities)		80,778.96
		$86,631.60
Reserve Fund.		
Balance, January 2, 1916..... $ 7,233.14		
Cash receipts 268.00		
Transferred from General Fund..... 62.00		
	$ 7,563.14	
(This fund by the constitution is composed of $3,050, originally credited to it, together with all the life fees which have been, or may hereafter be, received and the principal of this fund shall be held in perpetuity to guarantee the future interest of the life members.)		
Surplus.		
Balance, January 2, 1916..... $72,123.65		
Net profit for the year ended December 30, 1916 (for details see Exhibit F).. 1,492.17		
	73,615.82	
		$81,178.96

EXHIBIT B

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDED DECEMBER 30, 1916

Balance, January 2, 1916.....		$14,578.67
RECEIPTS		
Dues ..... $ 6,121.11		
Subscriptions 1,816.05		
Sale of books purchased..... 868.49		
Advertisements. 1,012.30		
Interest on investments..... 2,731.45		
Postage 541.95		
Binding 83.52		
Life membership fee..... 268.00		
Rebate on insurance..... 70.90		
Sundries 53.74		
Sale of extra publications..... 34,287.63		
Sale of Proceedings..... 335.06		
Credits 20.29		
Certified checks 3,641.75		
Total receipts		51,852.24
		$66,430.91
Balance, January 2, 1917.....		$20,364.54

DISBURSEMENTS

Printing and binding Proceedings	$12,726.00	
Printing and binding extra publications	14,252.68	
Salaries	5,119.00	
Contributors	2,877.00	
Authors of text-books (royalties)	2,510.40	
Postage and telegrams	1,018.95	
Expressage, freight and hauling	185.41	
Board meetings	255.60	
Purchase of books for sale	990.67	
Office expenses	400.00	
Stationery	426.16	
Advertising	152.28	
Certified checks	3,441.75	
Prize essay award	200.00	
Honorable mention award	250.00	
Refunds	7.50	
Engraving prize essay, medal and case	22.15	
Insurance on Institute property	80.00	
Attorney's fee	100.00	
Discount	5.85	
Subscriptions refunded	6.55	
Dues refunded	4.00	
Prize essay fund	1,000.00	
Overpayments	33.52	
Total disbursements		$46,066.37
Balance, December 30, 1916		20,364.54
		$66,430.91

Seaman's Bank for Savings, New York City.		
Balance as per letter dated January 6, 1917		$3,000.00
Rhode Island Hospital Trust Company, Providence, R. I.		
Balance as per letter dated January 3, 1917		3,570.78
Society for Savings, Hartford, Conn.		
Balance as per letter dated January 5, 1917		3,552.00
Farmers' National Bank, Annapolis, Maryland.		10,241.76
Balance as per statement dated January 2, 1917	$11,475.70	
Less Outstanding Checks.		
#2747	$ 2.50	
2976	32.00	
2977	112.00	
2978	45.00	
2981	24.00	
2982	7.50	
2986	10.00	
2988	5.00	
2989	5.00	
2990	5.00	
2991	5.00	
2994	823.45	
2995	1.32	
2996	.42	
2997	1.59	
2998	16.30	
2999	.96	

EXHIBIT B—Continued

#3000	$ 2.37		
3001	3.49		
3002	1.66		
3003	1.06		
3004	3.00		
3005	1.56		
3007	10.18		
3008	.45		
3009	36.13		
3010	3.75		
3012	25.00		
3013	10.00		
3018	26.35		
3019	.90		
3020	11.00		
		$1,233.94	
		$10,241.76	
			$20,364.54

EXHIBIT C

INVESTMENTS (BONDS) DECEMBER 30, 1916

Face Value		Book Value	Market Value
$ 6,000	Southern Railway. 6 $1,000 5% registered gold bonds	$ 6,000.00	$ 6,120.00
2,000	Washington Railway and Electric Company. 2 $1,000 4% 50-year gold bonds, consolidated mortgage	2,000.00	1,635.00
18,000	Northern Pacific and Great Northern R. R. 8 $1,000 joint bonds, registered; 2 $5,000 C. B. & Q. collateral registered	18,000.00	17,775.00
12,000	Northern Pacific Railway. 4 $1,000 3% registered gold bonds, 1 $5,000 3% registered gold bond, 3 $1,000 3% registered gold bonds, general lien due January 20, 1947	12,000.00	8,130.00
9,000	* B. & O. R. R. Co. 1 $5,000 first mortgage 4% 50-year gold registered, 1 $1,000 first mortgage 4% 50-year gold registered, 3 $1,000 prior lien 3½%, due 1925	9,000.00	8,325.00
2,000	Potomac Electric Power Company 5%	2,000.00	2,000.00
7,000	New York City registered 4½%	7,000.00	7,000.00
$56,000		$56,000.00	$50,985.00

EXHIBIT D

ACCOUNTS RECEIVABLE DECEMBER 30, 1916

Back dues		$ 775.00
Subscriptions		65.10
Advertisements		221.46
Extra publications		1,877.92
		$2,939.48

* $7,563.14 of these bonds belong to the Reserve Fund

EXHIBIT E

ACCOUNTS PAYABLE DECEMBER 30, 1916

Brentano, New York	$ 6.82
Postmaster, Annapolis, Maryland	22.24
M. Cox	13.80
Wells Fargo Express Company	37.20
Nautical Publication Company	.90
Globe Furniture Company	16.00
McGraw-Hill Book Company	4.07
Black & Company	100.00
Lord Baltimore Press	3,329.42
Authors of books (royalties)	2,301.90
Sundry credits	20.29
	$5,852.64

EXHIBIT F

INCOME AND EXPENSES FOR THE YEAR ENDED DECEMBER 30, 1916

Inventory, January 2, 1916.		
Back numbers of Proceedings	$ 200.00	
Extra publications	13,161.78	
		$13,361.78
Purchases for Year.		
Books for sale	$ 997.35	
Printing and binding Proceedings	12,792.17	
Printing and binding extra publications	11,918.44	
		25,707.96
		$39,069.74
Inventory, December 30, 1916.		
Extra publications	$ 7,012.58	
Extra numbers of Proceedings (as taken by yourselves).	300.00	
		7,312.58
Cost of publications sold		$31,757.16
Profit on sale of publications		4,117.41
		$35,874.57
Sale of extra publications	$34,671.02	
Sale of books	868.49	
Sale of Proceedings	335.06	
Total sale of publications		$35,874.57

EXPENSES

Postage and telegrams	$ 489.28
Expressage, freight and hauling	222.29
Insurance	9.10
Contributors	2,877.00
Salaries	5,119.00
Authors of books (royalties)	3,329.90
Office expenses	358.40
Board meetings	255.60

EXHIBIT E.—Continued

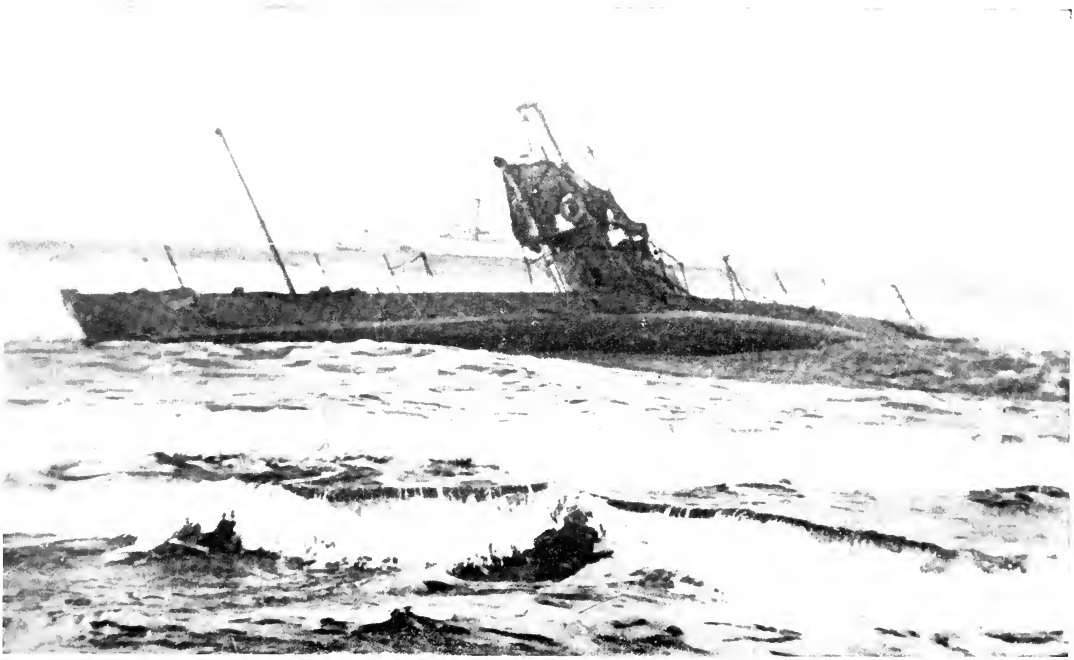
Prize essay award	$200.00	
Honorable mention award	250.00	
Attorney's fees	100.00	
Stationery	425.96	
Advertising	152.28	
Life members	62.00	
Engraving prize essay medal and case	22.15	
Total expenses		$13,872.96
Excess of income over expenses transferred to surplus		1,492.17
		$15,365.13

INCOME

Profit on sale of publications	$ 4,117.41	
Dues	5,631.91	
Subscriptions	1,819.40	
Advertisements	982.44	
Interest on investments	2,731.45	
Binding	83.52	
Total income		$15,365.13

This report of audit was accepted and approved by the Board of Control, at the monthly meeting held January 16, 1917.

J. W. GREENSLADE,
Secretary and Treasurer,
U. S. Naval Institute.



THE "H-3" AGROUND NEAR EUREKA, CALIFORNIA
(Copyright by Underwood and Underwood, New York)

PROFESSIONAL NOTES

Prepared by LIEUTENANT R. S. EDWARDS, U. S. Navy

GENERAL ARRANGEMENT

AUSTRIA

VESSELS BUILDING.—Nothing is known about the ships now building in Austria.

FRANCE

VESSELS BUILDING.—Nothing is known about the ships now building in France.

GERMANY

VESSELS BUILDING.—Nothing is known about the ships now building in Germany.

GREAT BRITAIN

VESSELS BUILDING.—Nothing is known about the ships now building in Great Britain.

ROYAL NAVY TRANSPORT SERVICE ESTABLISHED.—Last night's *London Gazette* contained an Order in Council sanctioning the establishment of a Royal Naval Transport Service. The schedule sets out the following grades, rank, and scale of pay under the new order, which takes effect as from December 1, 1916:

Grade of Transport Officer.	Equivalent Rank.	Pay (Consolidated Rate).
Principal naval transport officer	If a flag officer, the rank he holds	£1,700
Do.	Otherwise, commodore 2d class	£1,100
Divisional naval transport officer	Captain	£1,000
Transport officer, 1st grade	Commander, unless already of higher rank, when he retains that rank	£550
Do. 2d grade	Lieut. Commander	£450
Do. 3rd grade	Lieutenant	£400
Do. 4th grade	Subaltern or warrant officer	£250

The above rates of pay not to apply to engineer officers, accountant officers, chief gunners, chief boatswains, officers of the carpenter branch, chief officers of coastguard, lieutenants and quartermasters Royal Marines; and all these officers to retain their present rates of pay and allowances. Officers granted a higher relative rank under the above table to enjoy the status and wear the uniform of that higher rank, but are not to be entitled to use the higher naval title.—*Naval & Military Record*, 27/12.

HOLLAND

VESSELS BUILDING

Name	Displacement	Speed	Armament	Builders	Remarks
Cruisers					
.....	6000	30	10 6-in.	Amsterdam	
.....	6000	30	10 6-in.	Flushing	

NOTE.—Four submarines are building, three at Rotterdam and one at Flushing, of 836 tons displacement and a surface speed of 17½ knots. The two cruisers were to be built in Holland by Krupp, and it is not known whether or not construction is proceeding.

The budget for 1917 provides for the construction of three more submarines and a mine layer.

HOLLAND TO TAKE OVER INTERNED SUBMARINES.—London. The Dutch Minister of Marine, J. J. Rambonnet, says a Reuter despatch from The Hague, announces that because naval construction has been hampered by the war, negotiations have been opened with the British and German governments with a view to Holland taking over interned submarines. The transfer of one British and one German submarine has thus far been arranged.—*New York Herald*, 9/1.

ITALY

VESSELS BUILDING

Name	Displacement	Speed	Armament	Builders	Remarks
Battleships					
Carraciolo	30,000	25	8 15-in., 16 6-in.	....	To be completed in 1917
Marcantonio-Colonna	30,000	25	same	....	" " "
Cristofaro-Colombo	30,000	25	same	....	" " "
Francesco-Marosini	30,000	25	same	....	" " "

NOTE.—In July, 1914, approximately 15 destroyers, two torpedo-boats, and eight submarines were building.

It is probable that the building program has been accelerated and increased since the outbreak of the war.

ITALY INVESTIGATING DESTRUCTION OF BATTLESHIPS.—Rome, via Paris. More than 40 persons are now imprisoned as a result of the investigations into the destruction, in September, 1915, and August, 1916, respectively, of the Italian battleships *Benedetto Brin* and *Leonardo da Vinci*. The latter was blown up in Taranto Harbor and 248 men perished.

Lieutenant General Count Cardorna, Chief of Staff, came to Rome on Thursday to attend a meeting of the Cabinet, which was held for the purpose of deciding upon the disposition of the prisoners, but the question has become a political one from the introduction into the case of the name of one of the officials of the Vatican.

An Italian named Ambrogetti, who was among those charged with being implicated in the destruction of the warships, says he is the financial agent of Mgr. Gerlach, Pope Benedict's private chamberlain. Mgr. Gerlach is an Austrian, and according to information here was once a cavalry officer who became a priest and won the favor of the present Pope when the latter was a Cardinal. He was the bearer of the red hat from the Pope to the three French Cardinals who were appointed at the December Consistory.

It has been learned that Mgr. Gerlach, previous to Italy's entry into the war, was interested in a pro-Austrian newspaper at Vittoria, of which Ambrogetti was manager.

The Italian authorities have learned details of the plot which ended in the destruction of the two battleships from the Italian author, Archita Valente, who was arrested some months ago. The suspicion that the explosions on the ships were due to a conspiracy originated from the fact that certain naval machinists were aboard the ships at the time of their destruction, and on each occasion escaped uninjured. They were followed to Valente's house in Rome and were there arrested.—*Associated Press in N. Y. Herald.*

JAPAN

VESSELS BUILDING

Name	Displacement	Speed	Armament	Builders	Remarks
Battleships					
Ise	30,800	22.5	.....	Kawasaki	Launched 11-11-16.
Huga	30,800	22.5	.....	Mitsubishi	
Nagato	32,000	24.0	12 15-in. (?)	Kure Arsenal	

NOTE.—On April 1, 1916, Japan had nine destroyers under construction.

JAPAN DENIES RUMOR OF TRANSFER OF BRITISH SHIPS.—The press has published rumors to the effect that after the war England would transfer to Japan a number of large war vessels, six to eight being the usual numbers mentioned, while either battle cruisers or modern battleships were specified. The *New York Times* accordingly cabled the Imperial Government requesting confirmation or denial of the rumor and publishes the following from the Foreign Minister in reply:

TOKIO, December 29.

Consul General of Japan, New York.

It is alleged that the rumor seems to be prevalent at Washington that a certain agreement has been concluded between Great Britain and Japan that after the European war is ended the former will transfer to the latter six large sized men-of-war. The *New York Times* accordingly inquired by cable of the Imperial Government regarding the authenticity of the above rumor. As there is absolutely no foundation of fact whatever in that rumor you are hereby authorized to communicate with that newspaper to that effect.

(Signed) MOTONO.

RUSSIA

VESSELS BUILDING.—Nothing is known about the ships now building in Russia.

SPAIN

VESSELS BUILDING.—There are building or projected three 15,000-ton battleships, four 5600-ton cruisers, six destroyers, and 28 submarines.

UNITED STATES

BATTLESHIPS OF THE 1917 PROGRAM.—A press dispatch from Washington says that Chief Constructor Taylor told the House Naval Committee that the battleships authorized at this session of Congress will have a displacement of 42,600 tons in order to carry the main battery of 12 16-inch guns and make 23 knots.

ARMY AND NAVY TO BUILD A ZEPPELIN.—It was officially announced on January 9 that a Joint Technical Board, consisting of the Chief Constructor of the Navy, as senior member, and three officers from the aeronautic branch of the army and three from that of the navy, will soon be appointed to construct a "large airship of the general Zeppelin type." The plans necessary before such construction can be actually begun are already under way. The expenditures made in the work will be borne equally by the army and the navy appropriations made by the Sixty-fourth Congress. The decision to construct a rigid airship of the type in which Germany has specialized and which, according to numerous dispatches from the European fronts, her engineers have brought nearest the point of perfection, was taken after a joint committee, composed of officers from the aeronautical branches of both services, the General Staff of the Army and the General Board of the Navy, had completed a thorough study of the present status of rigid airships and had reported the Zeppelin the type best fitted for the needs of this country. The recommendations of this joint committee have been approved by the Secretary of War and by the Secretary of the Navy. In announcing this important step in the development of the military air defense of the country, the War Department declared that the "importance of the rigid airship for military and naval purposes is fully realized, and it

UNITED STATES VESSELS BUILDING AND AUTHORIZED

Name	Displacement	Speed	Main battery	Where building	% completed Jan. 1	Remarks
Battleships						
New Mexico	32,000	21	12 14-in.	New York	58	
Mississippi	32,000	21	12 14-in.	Newport News.	67	
Idaho	32,000	21	12 14-in.	Camden	68	
Tennessee	32,300	21	12 14-in.	New York	6	
California	32,300	21	12 14-in.	Mare Island	8	
Colorado	32,600	21	8 16-in.	Camden	0	
Maryland				Newport News	0	
Washington				Camden	0	
West Virginia				Newport News	0	
No. 49	Characteristics not determined					To be begun by July 1, 1919.
50						
51						
52						
53						
54						
Battle Cruisers						
No. 1	35,000	35	10 14-in.	Contracts not let		Bids under consideration.
2						
3						
4						
5	Characteristics not determined					To be begun by July 1, 1919.
6						
Scout Cruisers						
No. 4	7,100	35	8 6-in.	Seattle	0	Each carries 4 aeroplanes.
5				Contracts not let		
6						
7						
8	Characteristics not determined					To be begun by July 1, 1919.
9						
10						
11						
12						
13						
Destroyers						
Allen	1,071	30	4 4-in.	Bath	99	4 triple tubes
Shaw	1,110	29.5		Mare Island	97	
Caldwell	1,085	32		Mare Island	35	
Craven	1,085	32		Norfolk	19	
Gwin	1,123	30		Seattle	12	
Conner	1,121	30		Cramp's	28	
Stockton	1,121	30		Cramp's	28	
Manley	1,085	32		Bath	50	
20 (Nos. 75-94)	1,185	35	4 4-in.	8 Fore River 6 Union Iron Works 4 Bath 2 Mare Island	0	4 triple tubes.
30 (Nos. 95-124)	Characteristics not determined					To be begun by July 1, 1919.
Gunboats						
No. 21	1,575	12	3 4-in.	Charleston	0	
No. 22	Characteristics not determined					To be begun by July 1, 1919.

Submarines.

Building 61.

Authorized to be begun by July 1, 1919:—28 coast defence submarines
9 fleet submarines.

Vessels of the train.

Building and authorized:—

4 fuel ships,
1 supply ship,
2 ammunition ships,
1 hospital ship,
1 repair ship,
2 transports,
2 destroyer tenders,
1 fleet submarine tender.

is believed that the problems involved can be worked out better, more rapidly and more economically by joint action than if each service took them up separately."—*Army and Navy Journal*, 13/1.

THE NAVY'S AIR POLICY.—The *Army and Navy Register* publishes the following abstract of the preliminary estimates for naval aeronautics, 1918:

The following are detailed estimates in accordance with total estimate of $5,133,000, which it is understood has been accepted as the preliminary estimate for aeronautics, 1918:

Fleet:	
30 aeroplanes at $18,000	$540,000
Spare parts, operation and maintenance for above	448,200
	$988,200
Naval Militia:	
12 school aeroplanes at $9000	$108,000
Spare parts, operation, and maintenance for above	89,840
	$197,840
Marine Corps:	
One advance-base unit (4 aeroplanes at $18,000)	$72,000
Spare parts, operation, and maintenance for above	59,760
Two kite balloons	8,000
Hydrogen-generating set and storage cylinders	50,000
Hangars, runways, and shops	50,000
Tool outfits, etc.	45,000
	$284,760
Pensacola aeronautic station:	
40 aeroplanes at average price $12,000	$480,000
Spare parts, operation, and maintenance for above	398,000
Station maintenance	70,000
	$948,000
Pacific coast aeronautic station: Cost of development, including improvements to grounds, waterfront development, hangars, shops, and power plant	$750,000
Pearl Harbor station: Same as for Pacific coast station	500,000
Canal Zone: Army has been requested to add $250,000 to sundry civil bill for development of navy aeronautic station on Canal Zone	None.
Lighter-than-air craft:	
2 large dirigibles	$1,000,000
2 hangars for same	250,000
Hydrogen plants	200,000
	$1,450,000
Total of items listed	$5,119,200
Miscellaneous	13,800
Grand total	$5,133,000

In this connection the following letter of the Secretary of the Navy to *Aviation and Aeronautical Engineering* is of interest.

NAVY DEPARTMENT, WASHINGTON, D. C.

Sir: I beg to acknowledge receipt of your letter requesting a statement in regard to the policy of development of aeronautics in the navy, and the method of training officers and men of, and connected with, the naval service.

The policy is to develop seaplanes, dirigibles, and any other form of aircraft which may be useful, to a state where they will be of great assistance to the fleet in the many problems with which it has to contend or representing the first line of defense of the nation.

It is anticipated that the following duties will be performed by naval aircraft:

(*a*) Scouting from ships at sea.
(*b*) Off shore scouting from coastal stations.
(*c*) Spotting.
(*d*) Offensive operations against enemy aircraft and possibly against ships and stations.

Of the duties enumerated it is considered that scouting is primary, and it is the endeavor of the navy to develop aircraft for this purpose. Seaplane development has been carried on for several years, but has a long way to go before most of the required military conditions to make them a very useful adjunct are fulfilled. The conditions are much harder than for land machines; *i. e.*, weights and head resistance are greater, difficulties of float construction are enormous, method of handling necessitates special construction, and additional engine power is required to break machine from water. The solution of the seaplane problem is difficult because so few people really understand the many difficulties encountered. A certain amount of co-educational work was therefore necessary before any real progress could be made. Development of lighter-than-air craft is equally slow, as most of this work has been done abroad, and the knowledge on the subject in this country is very limited.

Now that sufficient funds have been appropriated the navy is in a position to push the development of this type of aircraft, and it is hoped that immediate results will be forthcoming. Specifications for lighter-than-air craft will be sent out before January 1, 1917.

The training of personnel has been slow, because of the lack of proper seaplanes with which to carry on the training. The system is thoroughly organized, and satisfactory seaplanes for this purpose are now being produced. The aeronautic station at Pensacola has been greatly developed, and the school at that place is working to the limit of its present capacity. In addition to training regular classes of naval and marine officers and men, classes of naval militia and coast guard officers and men are now received every three months and put through the course. In this way the trained personnel available in time of war is being rapidly increased. It is the intention to establish other stations as rapidly as the development of the air service will warrant.

The U. S. S. *Seattle*, equipped with five seaplanes and catapult launching device, will go south with the destroyer force for the winter practice in the Carribean. The U. S. S. *North Carolina* will again go to sea after her repairs are completed. She is also equipped with seaplanes and catapult launching device. Specifications for a special type of seaplane for use from ships at sea have been sent to the various seaplane manufacturers throughout the country, and it is hoped that by next spring some of this type will be ready for use.

In conclusion, it can be said that the training of personnel is now progressing smoothly, and that efforts are being made in every direction, both in America and abroad to obtain material for the proper equipment of the navy.

JOSEPHUS DANIELS, *Secretary of the Navy.*

BIDS FOR SCOUT CRUISERS.—New bids for three scout cruisers were opened on January 3. The only bidder was the Fore River Shipbuilding Corporation, which submitted two bids, one proposing to build one vessel for $5,900,000 or two vessels for $5,825,000 each; one in 40 months and the other in 42 months. The other bid was to build one or two vessels at actual cost of construction plus a fixed percentage to be agreed upon. One of the four scout cruisers authorized for immediate construction was awarded to the Seattle Construction and Dry Dock Company in December; bids for the other three were unsatisfactory and were readvertised with the results noted above.

INCREASED FACILITIES FOR NAVY YARD CONSTRUCTION RECOMMENDED.—High prices and unwillingness to build in accordance with Department specifications have characterized some of the bids for vessels of the 1917 program. One phase of this situation is outlined in the following from the *Army and Navy Journal:*

"The report that difficulties attending the securing of contracts for the installation of electric drive or other electrical machinery in the ships authorized in the 1916 program, had led to a change in the plans for the vessels, is authoritatively denied. To the contrary, it can be said that the original specifications for these ships still stand, and every indication is that they will stand until the ships in question are commissioned. As gathered at the Navy Department the situation is as follows: Manufacturers of turbine engines, fearing the importance of the precedent established by electrically propelled vessels, made every effort to prevent such equipment in the initial case, but lost the fight. When the specifications for the new warships were made known, the fight was begun with renewed vigor but, as a high official of the Navy Department said, 'they will again lose.' Asked if there was not good ground for the fear of the turbine makers that electric propulsion might become a fixture in all future vessels, this same official replied: 'At present there seems to be very good grounds for such fear.'"

In an effort to reduce the cost of hull construction the Navy Department requested the steel manufacturers to revise their estimates of cost of structural steel to shipbuilders, and about 75 per cent of the firms interested cut from 8 to 15 per cent from their estimates. Even with these reductions, however, the Department found it impossible to secure contracts for new ships within the limits of cost set by Congress. According to the *Army and Navy Journal* the decision was reached late in December to build one of the battle cruisers at the Philadelphia Navy Yard, and on January 8 the Secretary of the Navy recommended the appropriation of $12,000,000 for fitting navy yards for ship construction. The Secretary's letter to the Chairman of the House Naval Committee, which we quote from the *Army and Navy Journal,* is as follows:

"The situation with regard to the preparedness program is such that if the manifest intention of Congress and the country is to be carried out, radical action is necessary. It is required by the Act of August 29, 1916, that the vessels authorized be completed speedily. The Department has done its utmost in this connection, but finds that the private shipbuilders of the country are unable or unwilling to undertake the complete program with any assurance of speed in completion, even at prices which the Department regards as unreasonably high.

"The preparedness program halts by reason of this condition. The present situation demands that the Government largely increase its building facilities at the earliest possible moment. Six million dollars were authorized by the Act of August 29, 1916, for improvement of our navy yard plants, in order to enable them to assist in connection with the program. Ships have been ordered built at the navy yards fully up to the limit of our present facilities, there being already under construction or on order at the navy yards 19 naval vessels of various types. I recommend that $12,000,000 more be authorized for fitting up navy yards, to be made immediately available.

"The present conditions as regards the vessels authorized by the Act of August 29, 1916, are as follows: Four battleships, one scout cruiser, 18 destroyers, and 29 coast submarines have been awarded to private builders. Two destroyers, one coast submarine, one fuel ship, one hospital ship, one gunboat, and one ammunition ship have been assigned for navy yard construction. This leaves four battle cruisers and three scout cruisers for which as yet no satisfactory arrangements have been made.

"The battle cruisers were advertised on October 2, 1916, and bids were opened on December 6, 1916. No bids at a fixed price were received for the construction of these vessels, but bids were received from four private shipbuilding companies to construct these battle cruisers on a basis of cost plus profit. . . . The cost of direct labor and material for these vessels, although not a simple matter, can be obtained during the course of their construction with a reasonable degree of accuracy. It is not, however, so easy to apportion fairly and accurately the indirect cost.

"The bids as received proposed that the Government pay the actual cost of direct labor and material, plus a percentage to cover the indirect costs, plus a percentage for profit. The Department felt unwilling to place contracts on this basis without thorough investigation, as the proposed percentages for indirect costs differed in the various bids and might or might not be a measure of the actual cost of building the ship. Several conferences have been held with representatives of the shipbuilders, who have also given the Department experts access to their books, in order that some basis of agreement might be reached in regard to the questions involved in the indirect cost.

"The Department finally requested the Fore River Shipbuilding Corporation and the Newport News Shipbuilding and Dry Dock Company to submit in writing their best final offer for the construction of the battle cruisers.

"The Fore River Corporation in a letter dated January 4, 1917, submitted a revised proposal and estimate of cost for one battle cruiser, taking account of certain modifications permitted by the Department, as follows:

	Material.	Labor.
Hull	$4,653,000	$3,259,000
Machinery	5,901,500	777,700
Total Material	$10,554,500	$4,036,700
Total Labor	4,036,700	
	$14,591,200	

"Accepting the above figures as base cost, the letter says the company is prepared to construct, in accordance with the terms of its previous proposal, one battle cruiser for the actual direct material and direct labor cost, plus 35 per cent of such cost to cover all overhead charges and profit. This 35 per cent amounts to $5,106,920, making the total estimated cost of the vessel to the Government $19,698,120.

"It is further proposed that in case the actual costs are less than $14,591,200, the company will receive, in addition to such amount, 35 per cent of the same and one-half of the difference between such amount and $14,591,200.

In case the cost exceeds $14,591,200, the company shall be entitled to 35 per cent of such sum, but shall refund to the Government 25 per cent of the excess of the actual direct material and direct labor costs beyond $14,591,200."

Secretary Daniels continues: "The Department had previously informed the representatives of the shipbuilders that it considered the percentage of 35 per cent named by them too high. The Department also regarded the estimate for material submitted by the shipbuilders as unduly high. This question is being taken up with various material contractors, and the Department will be prepared at an early date to make final report and recommendation with reference to the minimum limit of cost for these vessels if built by contract.

"It is evident that in any case the cost will exceed the limit of $16,500,000 of the authorizing Act. This Act also allowed an additional sum of 20 per cent as premium 'to provide for the speedy construction of the vessels herein authorized and for the additional cost incident thereto.' Adding 20 per cent to the limit of $16,500,000, we reach a limit of $19,800,000, and apparently the Department could at the present time contract for these vessels with a prospect of not exceeding that limit. The four bids that were received provide, in two cases, for construction within 48 months; in one case for construction within 51 months, and in the other case no time is named. The shipbuilders state that they can do no better as regards time under the present and prospective conditions of the industry.

"Without specific authorization, the Department would not feel justified in entering into a contract exceeding the limit of $16,500,000, even if under the limit of $19,800,000, in view of the fact that the times named for construction could not be considered as 'speedy.' It has been suggested that the act in authorizing the additional 20 per cent for 'speedy' construction did not define the latter. Some light, however, is thrown upon the intention of Congress in this connection by the fact that while the bill was in the House, on a yea-and-nay vote on an amendment requiring, among other things, that five battle cruisers should be completed within two years from date of contract, there were, yeas 183, nays 180.

"As regards the scout cruisers, when bids were opened for these four vessels on November 1, 1916, but one bid was received on the basis of a fixed price, this being for one vessel for the sum of $4,975,000, and within the limit of cost of $5,000,000; contract was awarded for this vessel. The remaining three vessels were readvertised, and bids were opened on January 3, 1917. A bid was received from only one company, the price named being $5,000,000 for one vessel, or $5,825,000 for each of two vessels. This leaves one scout cruiser for which no bids have been received. The bids of January 3, 1917, were below the limit of $5,000,000, plus 20 per cent, but as the times named were 40 and 42 months, the additional 20 per cent for 'speedy' construction is not regarded as available any more than in the case of the battle cruisers.

"To sum up: The Department has made earnest and strenuous efforts to carry out the provisions of the Act and to begin at the earliest date possible the construction of the 66 vessels directed therein to be begun as soon as practicable. It has been found impossible to place satisfactory contracts for the whole of the vessels with the private shipyards of the country, and, as previously stated, our present navy yard facilities are fully obligated.

"In view of this fact, and in view of additional vessels of the program which must be taken in hand in the comparatively near future, it seems to the Department necessary that the Government building facilities should be largely expanded, so that the navy may be in a position to build a much larger part of the program than at present. This expansion, in view of present conditions, appears to be inevitable and necessary. Should Congress authorize it, the Department will do its utmost to fit up the yards at the earliest possible moment."

COMMENT ON THE SHIPBUILDING SITUATION.—The *Scientific American*, in its issue of December 23, comments editorially on the necessity for speeding up naval construction as follows:

"One of the most encouraging facts in the naval situation, just now, is the zeal with which Secretary Daniels is applying himself to the problem of getting the steel makers and shipyards to undertake the construction of the large number of warships authorized in the Bill for Naval Extension, recently passed, and put the work through as a rush order. As the Secretary states in his report, it is one thing to make large appropriations for a new navy, but it is quite another thing to build it.

"So far as the Navy Department is concerned, it must be admitted that, from the very moment at which the navy bill became law, it bent all its energies to expediting the work of construction, and great credit is due to Rear Admiral Taylor and the Bureau of Construction and Repair for the celerity with which it got out the plans and specifications for the new battleships, battle cruisers, scouts, destroyers and submarines, so as to have this material in the hands of the prospective bidders at the earliest possible date. Had the steel makers and private shipyards shown something of the same commendable zeal, the prospects of getting our new navy built and put in commission at a speed commensurate with the urgency of the situation, would not to-day be so exceedingly disappointing.

"It seems that, so long as our contractors have to do with a type of ship which conforms closely to those which they have just launched from their ways, they are willing to put in bids to do the work within the standard time of from three to three and a half years, in which previous ships have been built. But when the Department gets out plans for a new type of ship, the contractors, judging from the experience had in the attempt to secure satisfactory bids for the fast battle cruisers and scouts, either fight shy of the proposals altogether, or else they demand a length of time for construction which is altogether out of the question.

"Take the case of the bids for the new battle cruisers, which ranged, if we remember rightly (in so far as the time element is concerned), from 48 to 52 months for completion. Now 52 months is just four years and four months, which means that these ships would not be tried, accepted, put into commission and shaken down into thorough working condition until at least five years after the contracts had been let. It is all very well for the contractors to safeguard their own interests. In fact, it is perfectly proper that they should do this. But what about the interests of the country at large? So rapid is the present day development in size, power and speed of warships, that even these fast scouts and battle cruisers may be outspeeded and outgunned, and may be entering upon the first years of their obsolescence, in five or six years from the present writing.

"Even if we make allowance for high wages, scarcity of skilled labor, and the difficulty of obtaining materials, this demand of the contractors that they should be given from 48 to 52 months in which to build a capital ship is simply preposterous, and we can prove it by the following facts:

"We know of at least two of the leading shipbuilding yards on the Clyde in which there have recently been completed two superdreadnoughts, sister ships, of approximately the same length (850 feet) as our proposed battle cruisers, armed with 10 or 12 guns of 16-inch caliber or over, and protected with the heaviest armor, each of which was designed and built in approximately 18 months' time. The *Scientific American* publishes these facts on the very best authority and they may be accepted as absolutely correct.

"Now, the full significance of this will be appreciated when we remember that there could have been no opportunity to accumulate the material adjacent to the building-ways beforehand, so as to secure a spectacular result in speedy construction; for the plans were not commenced until 18 months before the ship was commissioned. Moreover, the ships were built

at a time when the whole of the engineering industries of the country were going under full pressure in the production of military material of every conceivable kind.

"This remarkably rapid construction result was made possible by a combination of conditions; conditions which we may, and should, repeat in this country; conditions, which, if we bring them about, will make it possible for us to turn out capital ships just as rapidly as are the British. These conditions are, first, that the government work is given absolute precedence over private work; and, secondly, that the equipment of the yards, both in machinery and men, is worked up to its full capacity. In the case of the British yards, work goes on in two shifts of 10 hours each, with four hours' interval for overhaul.

"Comparing this with the time actually occupied in construction of our more recent dreadnoughts, we find that the *New York* (starting, of course, with plans already completed) was launched in 14 months after the laying of her keel, and the *Arizona* in 16 months, and that each ship was completed in 36 months. This rate of construction was obtained with only one shift of men, working eight hours per day. It is the opinion of our constructors that with three shifts of eight hours each, the time could be cut down to 18 months. Both these ships were built at the New York Navy Yard.

"It is claimed by the private shipbuilding yards that the impossibility of guaranteeing quick construction is due, in large part, to the difficulty of securing early deliveries of steel, and that, even if these were available, there would still remain the difficulty of securing the requisite number of skilled mechanics. Both of these objections could be overcome if the legislation suggested by the Secretary of the Navy were put upon the statute books; and we agree with him that a law should be passed at once, rendering it obligatory upon the steel makers and the shipbuilding yards to give the absolute preference to naval work. If this be done, no hardship will be imposed upon the steel makers; for the sum total of naval and military tonnage would form but an insignificant percentage of the total output of our vast steel making plants.

"Thus, the total tonnage required for this year's naval contracts is 383,800 tons; whereas the total output of finished rolled iron and steel in the United States last year was 24,392,924 tons; so that the naval requirements constitute only 1½ per cent of the country's output.

"If, with a view to expediting work, the shipbuilding firms were required to put, say, two shifts, upon the more important naval construction, the cost of the ships to the nation would be higher, but the higher cost due to higher pay would be more than compensated for by the rapidity with which the magnificent naval program of 1917 would become available in the country's first line of defense."

CANCELS AWARDS FOR THREE SUBMARINES.—Contracts for the construction of three coast defense submarines, which had been awarded to the California Shipbuilding Company, Long Beach, Cal., were cancelled by the Navy Department on January 9 at the company's request. The contracts were immediately taken over, two by the Electric Boat Company, of New London, Conn., and the other by the Lake Torpedoboat Company, of Bridgeport, Conn. Of the 27 coast defense submersibles authorized by the last Congress, this final apportionment gives 20 to the Electric and seven to the Lake company. The California company originally bid for the construction of five or six submarines of the coast defense type, but the Department decided not to award it more than three, that being regarded as the capacity limit of the plant for completed work in the time specified. The contracts for these had not been signed when the request reached the Department that the award be cancelled.

BIDS FOR NAVY SHELLS.—The opening of the bids for armor-piercing shells for the U. S. Navy with the revelation of the fact that a British firm underbid, by a considerable margin, the American concerns making projectiles has stirred up considerable discussion in the Navy Department and among the interested manufacturers on both sides of the ocean. Examination of the bids on January 4 showed that Hadfields, Ltd., of England, agreed to supply 3000 16-inch projectiles in 16 months at $513 each, duty paid. The Bethlehem Steel Company asked $775 each, to provide 4000 in 36 months, while the price from the Midvale Steel Company was $900 each for 1000 in 24 months. For 14-inch shells Hadfields, Ltd., offer a price of $356 each for 4500, which they agree to deliver in 11 months. The Midvale Steel Company asked $550 each for 5600 shells, to be delivered in 30 months, while the Crucible Steel Company wanted $543.50 each for 2000, deliverable in 34 months.

On January 5 Secretary Daniels charged that American steel companies had been demanding extortionate prices for shells for the navy. He based this on the bids of Hadfields, Ltd., which for armor-piercing projectiles was from 35 to 40 per cent lower than bids of American concerns. Charles M. Schwab, of the Bethlehem Steel Company, issued a statement on the same day that reads: "At Bethlehem we have spent very large sums of money trying to meet Government specifications on 14-inch shells, and so far only at a considerable loss, for the reason that the tests have been so severe that we have not yet been able to meet them. Since the war started, although we have been able to obtain abroad almost any price for our product, we have adhered in our charges to the United States Government to the basis of prices established before the war began. We believed it would be dangerous for this country to be dependent upon foreign manufacturers for war material of any kind. We bid what we consider a fair price on any specifications issued by the Government."

H. A. Gillis, the American representative of Hadfields, Ltd., said to a *New York Sun* correspondent in Washington: "I do not believe the American firms have been charging the Government unreasonable prices. To my mind the steel companies are simply calculating upon a fair profit after meeting the increasingly difficult specifications. The Bureau of Ordnance of the Navy Department now requires that these shells be tested by being fired at steel plate which is at an angle of 10 degrees when the projectile strikes. This, of course, robs the shell of part of its striking force and makes the test more difficult. In some instances half the shells fail to meet the Government's requirements on this account. And the Government must realize that this may result in increasing the price, especially if a concern has virtually to make two shells to sell the Government one.

"We contend that we are able to provide armor-piercing shells which will meet this test, and we do not anticipate any of the trouble or additional expense to which American firms have been put. Our absolute confidence in this respect is due to the fact that we know about everything that can be known concerning the manufacture of armor-piercing shells. We have provided almost every nation with projectiles, and our present efficiency is such as to insure the best results and the least cost. Since the war Hadfields has reached a state of efficiency previously supposed unattainable. Not only is every ship in the British Navy fully supplied, but we have provided an immense surplus stock, which now reposes in storehouses and is far in excess of any demand that could be made upon it by the war. To keep our organization busy we have obtained permission from the British Government to bid for the American Government contract, and we are ready to put up bond to guarantee that we will meet the specifications in the time given and at the prices stated." Comment in the English newspapers bore out all these statements of the Hadfields representative.

Secretary Daniels took the incident as a peg on which to hang a further argument in favor of the plan for establishing a Government plant for the

manufacture of projectiles. Several members of the House Committee on Naval Affairs took the same ground, pointing to the Hadfields bid incident as evidence of the wisdom of their course in advocating such a plant.

It is understood that at the conference between the Secretary of the Navy and representatives of the Bethlehem, Crucible and Midvale Steel companies at the Navy Department, on January 10, slight reductions were offered in the bids submitted by the American manufacturers in the recent proposals for navy ammunition. These reductions, however, did not bring the bids from domestic concerns anywhere near that of Hadfields, Ltd., the British company, and it was probable that it will receive a contract for a large part of the needed shells.—*Army and Navy Journal*, 13/1.

ENGINEER-IN-CHIEF OF THE NAVY DISCUSSES ELECTRIC DRIVE.—Rear Admiral R. S. Griffin, engineer-in-chief, U. S. Navy, has answered fully and completely the statements made by Mr. S. S. Wheeler to Senator Swanson, of Virginia, in connection with the use of the electric drive in the new battle cruisers. His communication is addressed to Mr. Padgett, Chairman of the House Committee on Naval Affairs, before which hearings of shipbuilders in regard to this matter will be held next Wednesday. Rear Admiral Griffin's letter, dated January 5, follows:

1. In compliance with your request that I comment on any statements of fact or opinions, contained in a letter from Mr. Schuyler S. Wheeler to Senator Swanson, on the subject of electric drive for our battle cruisers, I have the honor to submit the following:

2. The first statement of Mr. Wheeler is that "the dynamos and motors each have to be large enough to equal the engines in power, and the engines are of 180,000 horse-power." The inference here is clear that each dynamo and each motor must be of 180,000 horse-power, which is far from the fact, and goes to show how one unfamiliar with the subject he is discussing may be led into error. The power of the ship is divided into four units of 45,000 horse-power each.

3. His first expression of opinion follows immediately upon this inaccurate statement and is:

"I believe that such substitution will be a great mistake and that after completion the ships will be found quite inferior to those having mechanical drive."

Such an opinion has value exactly in proportion to the experience of the one who expresses it and to his standing as an expert in such matters, and it is therefore necessary that Mr. Wheeler's competency in the matter under consideration be fully inquired into. I happened to be in the Secretary's office the day Mr. Wheeler called to see him, which was, I think, the day before he saw Senator Swanson, and the Secretary invited me to hear what Mr. Wheeler had to say. He commenced by reciting substantially what is included in his letter to Senator Swanson, and which was quickly recognized as the argument of another who is financially interested in the adoption of mechanical gearing and who has been very active in enlisting opposition to electric drive. Mr. Wheeler was asked how it happened that he should be so familiar with certain features of the design of the battle cruisers, the data of which were supposed to be confidential between the Navy Department and the shipbuilders, but he gave no satisfactory reply as

to the source of his information, contenting himself with the statement that he had "been told so." He was then asked whether he had ever had any experience with machinery for naval vessels and replied that he had not, but that he had had wide experience with electric machinery as applied to installations on shore. As he admitted his inexperience with naval machinery, but nevertheless presumed to advise the Secretary in regard to the most important installation ever contemplated, he was asked what type of machinery he would suggest for the battle cruisers, and notwithstanding his lack of knowledge of the requirements he unblushingly replied that he would recommend geared drive. Asked if he had had experience with such equipment, he said that he had, and when further pressed as to the power of the installations to which his experience extended, he replied that the largest was about 1000 horse-power. Finally, he was asked if he had any doubt that the electrical machinery which we contemplated installing would operate satisfactorily, and to this he replied that he had not. As satisfactory operation was the one thing we were looking for, and as the military features of the design of the ship as a whole far outweighed any other feature except this one of satisfactory operation, there seemed to be no reason for prolonging the interview, and Mr. Wheeler withdrew.

4. Mr. Wheeler says further that the application of electric drive in the battle cruisers would not be a success; that it would injure the electric art before the public; that it would greatly increase the weight in the ships; that it would take up an immense amount of room; that it is experimental, and that satisfactory bids would not be obtained for the ships on account of the electric drive.

5. Taking these up in order, it may be said that the Navy Department has the best possible reason for believing that electric drive will be a success; that we are the only people who have had extended experience with it; that that experience has been unqualifiedly satisfactory, and that the ship in which it is installed is so superior to the sister ship with geared drive as to put her in an entirely different class so far as reliability of operation and economy are concerned.

6. As to injury to the electric art, this opinion is, of course, predicated on the failure of the electric drive. But we have Mr. Wheeler's own statement that it will operate satisfactorily, and we have also the statement of another engineer who is interested in geared drive and whose arguments Mr. Wheeler uses, that he would not go so far as to say that electric drive will not work satisfactorily. Besides this, we have the opinion of eminent electrical engineers that no difficulties are involved in the installation. There need not therefore be any apprehension about the electric art suffering by reason of this application of it.

7. Mr. Wheeler seems to be much concerned over the weight of the electric machinery, as if that had not been considered in the design of the ship, and he undoubtedly is under the impression, for he states it in another paragraph, that the ships with electric drive will be 1000 tons heavier than they would be if they had geared drive. Here again those who gave Mr. Wheeler confidential information regarding the design of these ships did not tell him the whole story. If they had, they would have told him that,

although the geared drive is *per se* much lighter than the electric, its use brings in its train a large increase in weight of steam piping and valves, infinitely greater complication, and, in addition, adds about 300 tons more armor, the net result for the ship as a whole being an increase of about 300 tons instead of 1000.

8. As to the space occupied, no other type of machinery than electric can be installed in the space available, and no other type can give the underwater protection to the ship that is possible with electric drive.

9. Mr. Wheeler cannot have kept posted on what has been going on during the past four years if he regards electric drive for ship propulsion experimental. The *Jupiter* has been in commission for three and a half years and engaged in duty of a character to bring out any weak points in the design. That she has been an unqualified success is a fact well known to all prominent marine engineers and to many electrical engineers, and it is rather surprising that Mr. Wheeler should not be informed about her.

10. Mr. Wheeler's opinion regarding the difficulty in getting satisfactory bids for electric drive is not borne out by the bids received. Three firms bid—the Newport News Shipbuilding and Dry Dock Co., the William Cramp & Sons Ship and Engine Building Co., the Fore River Shipbuilding Corporation, and the Union Iron Works Corporation. (The Union Iron Works offered to build on the plans of Fore River, and, as both are subsidiaries of the Bethlehem Steel Corporation, the bids of these two companies may be considered one bid.) The Newport News Co. and the Cramp Co. bid only on electric drive. The Fore River Co. bid on electric drive and also on geared drive. In no case was a straight bid received, each firm offering to build on a cost-plus-percentage basis. The Fore River Co. did not make a different proposition in the one case than in the other, and therefore no qualification was made on account of the use of electric drive.

11. Mr. Wheeler states that he has since the opening of bids met two of the shipbuilders and learned that the shipbuilders, at a conference with the Department, had urged geared drive, but that nothing but electric drive would be considered. Here again Mr. Wheeler is suffering from lack of knowledge of matters which he is discussing and evidently did not learn his lesson well. No conference was held with shipbuilders regarding geared drive for the battle cruisers. The conference to which he refers was in reference to the battleships.

12. He again shows his lack of exact knowledge when he says that one of the shipbuilders submitted a letter stating that, with mechanical drive, he would guarantee 1000 tons less weight and $1,300,000 less cost. Such a letter was not submitted. Mr. Wheeler may have been told so, but there was no guaranty of anything, the shipbuilder merely stating that the weight of machinery would be about 1000 tons less, and that he "estimated" that it would cost $1,300,000 less than the electric drive. So far as guarantees are concerned, the figures might just as easily have been doubled; they do not commit anybody to anything.

13. Right here it may be well to point out the fact that the people who have given Mr. Wheeler information have not given him all the facts. I have indicated in paragraph 7 that the difference in weight is nothing like

what the advocates of geared drive claim; but be the difference in cost what it may, the cost of the additional 300 tons of armor which must be supplied with the geared-drive installation will counterbalance any difference in cost of machinery. Of course, Mr. Wheeler does not know about this, and those who have been prompting him took care not to tell him. As you know, armor is purchased from an appropriation other than that for the construction of the ship, and therefore its cost would not appear in the contract price of the ship, as it is supplied by the Government and installed by the contractor. The Government would nevertheless have to pay the bill.

14. Mr. Wheeler is correct in his statement that there is a gain in economy of operation at full speed with the geared drive; but this gain is small. At all speeds below 30 knots—and nearly all cruising will be done at the lower speeds—the superiority is with the electric drive and is so recognized by engineers.

15. The advantage in having all boilers below the protective deck is great, provided they can be given adequate protection against torpedo attack, but it should be remembered that these ships will make 30 knots even if all the boilers above the protective deck are out of action. The arrangement of machinery submitted by the only shipbuilder who offered geared drive was far more objectionable in that a very important portion of the equipment which should be protected is above the deck.

16. Mr. Wheeler's statement that a simple contract with simple guaranties could be made if mechanical drive is used is answered by the statement that the only shipbuilder who offered geared drive submitted the identical proposition with that which he submitted for electric drive.

17. When Mr. Wheeler comes to discuss the extent to which geared drive is used in the British Navy, he is clearly making statements about which he cannot possibly have personal knowledge. The best information of the Navy Department is that the British Navy has not in service battle cruisers of the power stated, nor indeed any under construction of anything like that power. The Navy Department has had some experience with geared installations, and this has been of such a nature as to make the transmission of such high power through gearing appear far more experimental than by means of electrical transmission.

18. Mr. Wheeler dismisses the important subject of reversing turbines in a few words, merely stating that nearly all turbine-driven ships use reversing turbines. Being unfamiliar with naval machinery and the important rôle of the reversing turbine, he could not, of course, be expected to understand the military importance of backing power, nor could he know the troubles due to backing turbines that have been experienced in turbine-driven vessels. These troubles exist with the geared drive just as they do with the straight turbine drive, and any injury to one turbine involves stopping the ship and putting out of use the shaft to which that turbine is attached. Should an accident occur to one of the turbines of an electric-drive installation, it would simply mean a reduction in full speed of about two knots and this without necessitating stopping the ship. The absence of backing turbines, the fact that the turbines always run in one direction,

and that full power of the engines can be utilized for backing are features not only of mechanical advantage, but of such military superiority as to leave little question as to the type to choose for capital ships.

19. As Mr. Wheeler does not seem to be informed in regard to the cause of the recent disablement of the *Jupiter*, it should be stated that it was due to a small piece of an oil-strainer basket becoming detached and being carried with the oil to the thrust bearing, causing heating of the thrust and necessitating stopping the turbine. A new thrust was fitted by the ship's force, and the ship proceeded on the duty assigned her. The trouble was not in the remotest degree associated with her electrical equipment.

20. Mr. Wheeler concludes by stating that the best design should be selected, regardless of other considerations, and that the subject should be "reviewed by recognized impartial expert authorities." Can it be possible that Mr. Wheeler assumes that the Navy Department has determined on this installation without having given the subject most serious consideration? If so, he little knows the thoroughness with which the Department proceeds in such matters. As to "impartial expert authorities," it must be patent that the Secretary of the Navy alone can decide who such authorities are, and that the delegation of his authority to irresponsible people outside the naval service could not be considered. Under no circumstances could the Secretary think of accepting as impartial authorities the people who communicated confidential information to Mr. Wheeler and who are pecuniarily interested in the installation of a type of machinery which the Navy Department does not believe to be suited to the conditions obtaining in the battle cruisers. In the last analysis the Secretary of the Navy must decide such matters, aided by the best technical advice he can obtain. His naval advisers are not interested in any firms that will manufacture the machinery for these ships, nor will they receive royalties whichever type is installed. Their only reward will be the satisfaction that may come to them after the ships are tried—that of duty well done.—*Army and Navy Register*, 13/1.

THE "E-2's" BATTERIES.—Although the findings of the special board appointed by the Secretary of the Navy to investigate the entire matter of submarine batteries, as a result of the battery explosion on the *E-2* last January, have not been made public as yet, it became known through the statement made by Engineer-in-Chief Robert S. Griffin, U. S. Navy, before the House Naval Affairs Committee, that the report had been received by the Navy Department. It will be remembered that the first board appointed to investigate the accident on the *E-2* decided that it was due to a generation of hydrogen in the battery and recommended that no more of the Edison batteries be used in submarines until the one used in the *E-2* had been thoroughly tested out, and until it was demonstrated that it was a perfectly safe battery to use.

Engineer-in-Chief Griffin said, in reply to inquiries by members of the House Committee, that the Navy Department had settled on the Ironclad battery for the submarine being built at Portsmouth. He also said that "about the only way that we think of to really solve that problem (of hydrogen-gas detection) is to have abundant ventilation and to keep the ventilation going all the time." He explained that in all the lead batteries there is a generation of hydrogen when the batteries are being charged, and

unless that is carried away quickly there is danger of an explosive mixture being formed. The point about the Edison battery, he stated, was that "it gives off hydrogen in considerable quantity when reversed." There is also "about five times as much hydrogen gas liberated on charge in the Edison as in the lead batteries." That the accumulation of gas is more easily controlled in lead batteries than in other batteries was also stated. He added that to the best of his knowledge the defects in the Edison battery have been partially corrected.—*Army and Navy Journal,* 16/12.

THE LEWIS GUN CONTROVERSY.—The Secretary of War, on December 17, issued a statement setting forth the reasons for the rejection of the Lewis gun, the text, taken from the *New York Herald,* being in part as follows:

"At various times there have appeared charges and countercharges in the press with reference to the merits of the Lewis machine gun. The controversy reached the stage where open letters from high ranking army officers were published. In order to settle authoritatively the technical question involved, a board was constituted, the report of which was recently made public. In addition, the Inspector General of the Army was ordered to investigate the other aspects of the case. He has now done so, and his general conclusions are as follows:

"First. There is no official record that Colonel Lewis ever offered a gun of his invention, through any individual or through the Board of Ordnance and Fortification, to the United States Government free or at a price.

"Second. The first and only offer of the gun to the Government, of record, was made by a representative of the American Arms Company on September 2, 1913, to the Chief of Ordnance—100 guns, complete, at not to exceed $1000 each, and to license the Ordnance Department to manufacture and use such guns in the United States for a royalty of not to exceed $150 per gun.

Subjected to Tests.—Third. Such tests as the Lewis gun has been subjected to have been under a program authorized by the Board of Ordnance and Fortification and approved by the Secretary of War, and were made by boards of officers named in orders from the Adjutant General's office—one officer of the Ordnance Department on each board.

"Fourth. The Savage Arms Company, through its president, in a letter to the Chief of Ordnance, with reference to the test conducted in April, 1916, stated:

"'The company feels that the investigation has been entirely impartial and regards the board as one very capable of judging the value of the investigation to the Ordnance Department. We also appreciate the courtesy shown us by Colonel Peirce and his assistants.'

"The records do not show any hostility on the part of General Crozier or the Ordnance Department to the Lewis gun, but do show that the department, by direction of its chief, afforded the owners of this gun every reasonable facility in placing it before the testing board at the Springfield Armory.

"The Secretary of War has approved these conclusions of the Inspector General, and in accordance with the latter's recommendation has directed the controversy to cease."

MANUFACTURE OF MACHINE GUNS IN THE UNITED STATES.—An interesting article describing the manufacture of machine guns, published in the January 13 issue of the *Scientific American,* throws some light on what may be expected of munitions manufacturers in case of war. It is stated that the company manufacturing the Colt-Marlin gun was not organized until late in 1915 and is now turning out 200 complete rifles a day, the plant at New Haven being, according to the writer of the article, probably the largest machine gun producing plant in the world.

FOR PURCHASE OF THE CHESAPEAKE AND DELAWARE CANAL.—By a resolution passed at the last session of Congress the Secretaries of War and Navy Departments were authorized to appoint a committee of army and navy experts to make an investigation looking to the purchase of the Chesapeake and Delaware Canal and report to this session, hence a vigorous effort for the purchase of that waterway is now under way by those advocating making the canal a part of the inland route to parallel the Atlantic coast, which is being urged as a military and commercial necessity. The Atlantic Deeper Waterways Association is a leading factor in this work and will leave no effort undone to bring it to success.—*Marine Journal, 23/12.*

GOVERNMENT CONTROL OF RADIO RECOMMENDED.—The *New York Times* publishes the following account of the project of the Navy Department to take over the control of coastal radio stations:

Washington, Jan. 2. The purchase by the Government of all existing coastal and commercial wireless stations in the United States, Alaska, Hawaii, Porto Rico, and the Swan Islands within two years is recommended by Secretary Josephus Daniels of the Navy Department in an official communication made public to-night. Secretary Daniels is urging the control and ownership of radio communication by the Government as a matter of national defense and as making for efficiency in naval, military and commercial work.

The letter was sent under date of December 29 by Mr. Daniels to Senator Fletcher of Florida, and Representative Alexander of Missouri, who are the chairmen of the committees in Congress which now have under consideration the Radio Bill proposed by the Interdepartmental Committee.

"The bill," says Secretary Daniels, defining the attitude of the Navy Department, "covers the purchase of coastal stations only; that is, only those used to communicate with ships, and, by permitting the Navy Department to open all of its stations to commercial business, discourages the extension of any existing commercial systems or the organization of new systems.

"The Department strongly recommends that the committee provide for the purchase of all stations used for commercial purposes. In some cases the status of existing stations is constantly changing, and decisive action at this time will result in a saving of public funds. I recommend that Section 6 of the bill provide for the purchase, through the Navy Department, of all coastal and commercial stations in the United States, Alaska, Hawaii, Porto Rico, and the Swan Islands within two years, at reasonable valuation, and that no license be granted to any such station for operation after two years from the date of the passage of the bill."

Secretary Daniels indorses the other provisions of the bill, especially those relating to the ownership, the licensing, and the control of stations by the Department of Commerce.

Mr. Daniels explains that the Navy Department "is convinced that government operation and control of all stations used for commercial purposes, other than those on board merchant ships, is necessary on account of the mutual interference between stations."

"One station or system," he says, "must wait for another to finish; there are many chances for disputes which sometimes are carried on between operators by radio, especially when the operators are not under strict control, adding to the time wasted; there is needless duplication of effort, and in cases of distress the confusion resulting from many interests attempting to render aid, get news, or satisfy curiosity, is very dangerous.

"Since only by the closest regulation can the best use of this art be obtained, not only for commerce and safety at sea, but for military purposes, radio telegraphy is a strict government monopoly with the larger number of foreign nations, and in those foreign countries where commercial stations are permitted, the government control is generally so strong as to amount to a monopoly.

"Authority to take over and operate or to close commercial stations in time of war will not suffice. The stations must be in full government operation before the first hint of possible hostilities."

Comment in the press is generally noncommittal, though the following from *Shipping Illustrated* indicates that merchant shipping interests favor the scheme:

There is but one opinion in shipping circles concerning the proposed taking over by the Government of all wireless stations in this country. The amateurs who rig up antennae on the roofs of their dwellings and interfere with the exchange of messages "for the fun of it," are greater nuisances than is commonly supposed. Particularly in connection with danger warnings have these amateurs made themselves obnoxious and it can be said that at least one ship—that was sunk off Nantucket by the *U-53*, to the great discomfort of many Americans—would have escaped but for the fact that her efforts to elucidate the warning sent her by another ship, which had run afoul of the submarine, were blocked by interference from shore, probably on the part of amateurs. In all other countries, wireless communication is under the control of the government and it is time that the same policy were adopted here.

The attitude of the Marconi Company is given in the *New York Herald* as follows:

Protesting against Secretary Daniels' advocacy of government monopoly of radio communication, as outlined in a letter addressed to the Commerce and Marine Committee of the Senate and House, Edward J. Nally, vice-president and general manager of the Marconi Wireless Telegraph Company of America, declared yesterday that "Government control will tend to hamper the art of radio communication, because the Government has not the stimulus of commercial competition and the hope of individual reward, and it is prone to take present accomplishments as finalities."

Another reason assigned by Mr. Nally for opposing the proposed measure is that "it will effectively stifle the growth of wireless telegraphy and amounts practically to a confiscation of private interests."

"Moreover," said Mr. Nally, "it is against the established principle of the American nation, which has heretofore allowed free scope for all work, and especially work of an experimental nature. There are already ample laws and regulations giving the United States Government the necessary power for control of all radio stations in time of war or public peril. In fact, all ship and shore stations are now, and have been since 1912, operated under the control and supervision of the Department of Commerce of the United States. In times of emergency the Marconi Company has repeatedly offered to place at the disposal of the nation, not only all its operators, but the equipment of the company and the services of the entire staff. In the recent Mexican crisis, when American battleships were sent to Vera Cruz, the Marconi Company, through its president, John W. Griggs, offered to the Secretary of the Navy the free use of the Marconi coast stations for the United States Navy, and the offer was accepted."

Mr. Nally said that although the Government had been a large user of wireless for many years, it had not contributed any of the important improvements which have been made during that time.

"It would be an interesting study," said Mr. Nally, "to compare the present cost to the Government of business handled by its own stations, message for message, with the cost to private companies for messages and business handled between private stations. And, finally, if the Government takes over the radio service it is only a step to federal operation of the telephone and telegraph systems of the country. It is the entering wedge to government ownership of these utilities."

EXPERIMENTS WITH PROTECTIVE DECK ARMOR.—One of the experiments of the Navy Department to determine the effectiveness of deck protective

armor was made at Rappahannock Spit on January 8, when the U. S. S. *Oklahoma* fired trial 14-inch shells at the U. S. S. *Puritan*, which had been specially fitted with a new protective deck designed to keep shell fragments from penetrating the deck. The *Puritan* was sunk by the shells, but as she was moored in shallow water she may be raised.—*Army and Navy Journal*, 13/1.

MILWAUKEE AGROUND.—On January 13 the cruiser *Milwaukee* grounded near Humboldt Bay while engaged in salvage operations on the submarine *H-3*. Press reports indicate that it will be impossible to float the vessel, but it is understood that her machinery and equipment can be salvaged without difficulty. Press reports state that the *Milwaukee*, at the time of the accident, was in a dense fog and had a line attached to the *H-3* when she was swept ashore by a heavy current.

The *Milwaukee* is a first-class cruiser built at the Union Iron Works and first commissioned in May, 1906. Her displacement is 9700 tons, trial speed 22.22 knots, armament 14 6-inch and 18 3-inch guns.

SALVAGE OPERATIONS ON "H-3."—Attempts to float the *H-3* have so far been unsuccessful and the *New York Herald* says that a contract to float the vessel was, on January 14, entered into with a private concern.

UNITED STATES NAVAL MILITIA AND NAVAL RESERVE

WINTER TRAINING FOR NAVAL VOLUNTEERS.—The winter season of civilian naval training, which the Navy Department evolved out of last summer's "Naval Plattsburg" plan, was begun in the navy yard, New York, on January 8. Eighty-six students reported for instruction on board the U. S. S. *New Jersey* for the afternoon session and 55 for the evening class. Commander Louis A. Kaiser, U. S. Navy, overlooked the work of the classes, but the actual instructors and their subjects are: Lieut. Randolph P. Scudder, ordnance and gunnery; Lieut. (J. G.) Ewart G. Haas, navigation; and Lieut. Sherwoode A. Taffinder, marine engineering. Most of the members of the winter classes took part in the civilian naval training cruise last summer.—*Army and Navy Journal*, 13/1.

DEPARTMENT PLAN FOR CIVILIAN NAVAL TRAINING.—The Naval Training Association of the United States, which is to the civilian naval training movement, what the United States Military Training Camps Association is to the Plattsburg movement, announced yesterday that the Navy Department was arranging an elementary course in naval training for civilians who desired to fit themselves for service with the navy in the event of war. The training will be followed by training cruises on reserve battleships next summer.

The new departure, which is in line with the Navy Department program to create an adequate naval reserve force in this country, is one of the results of the training cruise for civilians held last summer. More than 2000 men, from all parts of the country, enlisted for that cruise.

"The Navy Department," the announcement issued from the headquarters of The Naval Training Association, 31 Nassau Street, reads, "proposes to establish naval training stations for civilians at Newport, Norfolk, Chicago and San Francisco, and probably at Pensacola. At these camps civilians will be trained for a period of a month, the instruction being the same as is given recruits for the active service.

"Those civilians who underwent a course of training last summer will have the opportunity for a further and more advanced course of training on battleships of the United States Atlantic Reserve Fleet. Ten or twelve battleships of the reserve divisions, under command of a flag officer, will be detailed for this purpose. Already arrangements have been completed whereby civilians in certain of our seaports will have the opportunity to get preliminary training on battleships, the drills and instruction being so arranged that the tours at the training camps and on the ships next summer will be of more value to the civilian than would be the case did he not receive the preliminary instruction.

"The battleships *North Dakota* and *Minnesota* have been detailed for these drills and instructions at Philadelphia, and the battlship *New Jersey* has been dealed at New York. It is estimated that fully 10,000 civilians will take advantage of the opportunity afforded them by the Navy Department for courses of training at camps and on battleships during the ensuing summer.

"The time of holding the camps of instruction and cruises are tentatively arranged to take place between July 2 and August 4. Should more civilians apply to take the course of training afforded by the Department than can be accommodated by the training camps and battleships in one period, the Department proposes to have additional periods of instruction so that all who volunteer may be instructed.

"To provide motor boat squadrons for use as patrol and dispatch vessels and other duties in connection with the defense of the coast in time of war, the Department will undertake to form and train motor boat squadrons in accordance with the provisions of the Act of Congress of August 29, 1916, whereby owners and operators of motor boats may join the naval coast defense reserve. Under existing law the Department is authorized to establish schools or camps of instruction for the purpose of instructing members of the naval reserve force and those civilians who desire to fit themselves for such membership. Members of the naval reserve force receive small retainer pay, and their expenses are paid by the Government.

"In order to make the Naval Reserve attractive to those civilians who desire to volunteer their services for training as naval reservists the Department proposes to recommend to Congress that the term of enrolment and re-enrollment in the Naval Volunteer Reserve be one year. Civilians who qualify for and enroll in the Naval Volunteer Reserve will have their expenses for transportation and subsistence defrayed by the Department.

"At the present time the Department is enabled to furnish gasoline and oil to the boats of the motor boat squadron. The department proposes to ask the Congress also to furnish fuel and oil to other than gasoline boats that are suitable for use in patrol squadrons."—*New York Times*, 27/12.

ENGINEERING

RESULTS OF DIESEL ENGINE TRIALS IN U. S. NAVY.—While the trial trip of the U. S. fuel ship *Maumee* has proven her to be a success, there must be some radical changes in the Diesel engines with which she is equipped if they are to prove a success in battleships or other vessels requiring a high rate of speed. The *Maumee* has been sent to the New York yard for some alterations in her machinery, after which she will have another trial. Unless she shows more speed than she has up to date the *Maumee* may be the last large navy ship to be equipped with Diesel engines. The chief objection to the Diesel engine is the large amount of heat which it generates. This difficulty can be overcome in ships of lower speed, but apparently not in engines of high power. The *Maumee* experiments show that the Diesel engine would be a success in tramp ships and vessels of this class. —*Army and Navy Journal*, 16/12.

A NEW METHOD OF SALVAGING SUNKEN SHIPS.—Interest has been aroused in Brazilian technical circles by a recent lecture at the Club de Engenharia (Engineers' Club) of Rio de Janeiro, by Dr. Sylvio Pellico Portella, concerning his invention for the salvage of sunken ships. It is claimed by him that the invention is applicable to ships sunk at almost any depth, so long as divers are able to reach them, and that it is effective in putting a wreck afloat, no matter what its position on the sea floor.

The invention consists of a tender of special model, which is equipped with floats of waterproof material. These are neatly folded, but later, when inflated with air, they assume all sorts of shapes—parallelopipeds, spheres, cylinders, etc. They are carried down by divers and attached to various portions of the sunken vessel, both within and without, still retaining their connection by means of hose with the tender ship. When all are properly fastened in place they are inflated by air pressure from above, like the tires of an automobile. As they swell they are said gradually to displace the water within and about the wreck, and it is claimed that by their own buoyancy they float it to the surface. It is said that the invention had two trials in Paris.—*Scientific American*, 30/12.

SUBMARINES

THE IDEAL SUBMARINE.—It seems to be necessary for every type of warship to pass through a phase of its development in which the matter of size is the all-absorbing question. Usually the disputants are divided into two schools, one of which believes in putting displacement into the biggest practical units, combining the maximum of speed, power and defense, the other believing that displacement should be distributed among a large number of smaller craft, which, though individually weak, would be overwhelming when they attacked in mass.

Invariably (and students of naval construction should take careful note of this) the advocates of great power and speed have won out, and in this connection it is significant that the latest designs for our own navy call for 42,000-ton battleships, 35,000-ton battle cruisers, 7000-ton scouts and 1200-ton destroyers, all of these classes, save the battleships, to have 35 knots speed.

It is only when we come to the submarines that we find the old controversy still raging. A few of our naval men and, alas, the majority of our Congressmen, are still clinging to the belief in the efficiency of mosquito craft. They believe that a host of 500-ton coast-defense boats of moderate speed and small sea-going power, would afford a better defense than a smaller number of boats, twice their size, of greater speed, of wide radius of action, of great powers of offense, and capable of going out with the main fleet to tackle the enemy a thousand miles off shore, if need be.

The principle of compromise controls all naval construction and it is particularly insistent when we come to the submarine. The sea-going officer asks for certain qualities in an ideal submarine, and the naval constructor too often finds that within the limits of size imposed, the combination of these qualities in the degree asked for is impossible. It is largely because of this fact that the Department some time ago detailed a naval constructor, Mr. E. S. Land, to duty with the submarine flotilla, and during a period of many months he lived aboard our submarines, making many trips of greater or less duration. This practice of sending naval constructors to sea for observation is excellent, and we believe that it could be extended to very good effect. A notable instance was the dispatch of Naval Constructor Robinson with the fleet in its famous voyage around the world. Indeed, we are of the opinion that it would be advisable for every naval constructor, at stated intervals, to spend a certain amount of time with the fleet.

In his recent testimony before the House Committee on Naval Affairs, Mr. Land gave it as his opinion, based upon his experiences at sea, that the ideal boat for the United States Navy would be one of between 750 and 950 tons displacement and from 225 to 250 feet in length. A preliminary estimate shows that a boat of this size could be built with a surface speed of from 17 to 19 knots and a submerged speed which might reach 14 knots. It could carry a powerful armament of torpedoes and rapid-fire guns, and it would provide comfortable berthing accommodations for the crew—this last a most important consideration in submarine work. A submarine of this size would be capable of keeping the sea and maneuvering in company with the main fleet; something which our present submarine of 400 to 500 tons displacement cannot do.

Since increased size brings such manifest advantages, the question naturally arises: Why not go yet higher and build submarines of 1200 to 1500 tons displacement? The answer is that submarines of this size, with a length of from 300 to 400 feet, would be impracticable, or at least, inadvisable; first, because they would be too slow in submerging, and secondly, because when submerging, except at very small angles of inclination, they would run the risk of reaching dangerous depths before they could be controlled; dangerous depths being those at which the nose of the boat may strike bottom, or the hull be subjected to crushing stresses, due to a water pressure beyond the strength of the boat.

Even at small angles of inclination the manipulation of a submarine, 300 to 400 feet long, at high speed below the surface might carry the boat to dangerous depths before she could be controlled. A speed of 12 knots is equivalent to 20 feet per second; and it would not take many seconds to carry the vessel beyond the danger line.

Swift submergence, so necessary when attacked, becomes more difficult with the increase in size of the submarine, and it is believed that 800 to 900 tons marks the limit, beyond which submergence is too slow to ensure safety against being rammed by a destroyer or submarine chaser. Submergence depends upon ability to destroy the reserve buoyancy by filling the ballast tanks, and the speed of filling depends upon the size of the valves. If the valves are big they are difficult to keep tight and the pressures upon them are such that they cannot be operated rapidly by manpower.

Limitations of space prevent our following this argument any further; but attention should be drawn to the fact that 800 tons is about the displacemen of the German sea-going submarines which lately have ventured so far afield. This type preponderates, so far as numbers are concerned, in the navies of England, Austria and France. Japan and Russia are building 800-ton boats, and at the time of the Naval Affairs Committee examinations last year, reliable information came from Italy that they had abandoned the 400- to 500-ton type and were building only boats of from 750 to 950 tons.—*Scientific American*, 13/1.

AERONAUTICS

DIMENSIONS AND PERFORMANCES OF SUPERZEPPELINS.—Figures on the dimensions and performances of the latest superzeppelins that are apparently authentic are published in *Zeit.* Four ships have been built at Friedrichshafen and tested over Lake Constance of which the following data are of interest: Length, 240 meters; diameter, 23 meters; volumetric contents, 32,000 cubic meters; horse-power, 4000 to 5000 with eight motors; maximum climb, 4000 meters; usual climb, 3000 meters; maximum speed, 120 km. per hour. These dirigibles can carry a munition load of 6000 to 7000 kilograms.—*Aviation*, 15/12.

TABLE SHOWING PROBABLE ZEPPELIN LOSSES FROM AUGUST 1, 1914, TO JANUARY 17, 1917

No.	Name	Place	Date	Cause of Loss
1	Z-8*	Badonvillers, France ...	22- 8-1914	Destroyed by French gunners. Part of crew lost.
2	Z-5*	Mlava, Russia	29- 8-1914	Destroyed by Russian gunners. Crew lost.
3	?*	Seradz, Russia	6- 9-1914	Captured, while at anchor, by a cavalry patrol. Crew of 30, prisoners.
4	?	Düsseldorf, Germany ...	9-10-1914	Destroyed in shed by British aviators.
5	LZ-31*	Friedrichshafen, Germany.	21-11-1914	Destroyed in shed by British aviators.
6	?	North Sea	23- 1-1915	Foundered during a storm.
7	L-3*	Esbjerg, Denmark	17- 2-1915	Stranded, having run out of fuel, and broke up. Crew of 16 interned.
8	L-6*	Boulogne, France	5- 3-1915	Foundered during a storm, after having raided Calais. Crew lost.
9	L-8*	Tirlemont, Belgium	4- 3-1915	Damaged by British aviator; wrecked on landing. 21 of crew killed.
10	?	Thielt, Belgium	12- 4-1915	Damaged, over Béthune, by French gunners; wrecked on landing.
11	?*	North Sea	26- 5-1915	Broke away without crew; foundered off Heligoland.
12	LZ-37*	Evere, Belgium	7- 6-1915	Destroyed in shed by British aviators.
13	LZ-38*	Ghent, Belgium	7- 6-1915	Destroyed in mid-air by British aviators; crew lost.
14	L-?*	Ostende, Belgium	10- 8-1915	Raided London. Destroyed, upon her return by British aviators.
15	?*	Vilna, Russia	24- 8-1915	Shot down by Russian gunners; crew of 10 made prisoners.
16	?*	Saint-Hubert, Belgium ...	13-10-1915	Destroyed by exploding in mid-air.
17	?	Maubeuge, France	16-10-1915	Stranded on a chimney and broke up.
18	?	Grodno, Russia	5-11-1915	Destroyed by the storm on landing.
19	L-18*	Tondern, Germany	17-11-1915	Wrecked in shed through an accidental explosion.
20	Z-28	Hamburg, Germany	17-11-1915	Wrecked by the storm.
21	L-22*	Tondern, Germany	1-12-1916	Destroyed in shed through accidental explosion of a bomb.
22	?*	Kalkun, Russia	5-12-1916	Shot down by Russian gunners. Crew lost.
23	?*	Mainvault, Belgium	30- 1-1916	Raided Paris. Damaged by French aviator; wrecked on landing.
24	L-19*	North Sea	21- 2-1916	Raided England. Probably run out of fuel; foundered. Crew lost.
25	LZ-77*	Révigny, France	21- 2-1916	Shot down by French motor guns; destroyed in fall. Crew of 15 killed.
26	L-15*	Kentish Knock, England.	1- 4-1916	Shot down by British gunners; crew of 18 surrendered. Vessel sank.
27	L-20*	Stavanger, Norway	3- 5-1916	Raided Scotland. Stranded, having run out of fuel and drifted with the wind. Blown up by crew; 3 killed, 16 interned.
28	L-7*	Off Schleswig Coast....	4- 5-1916	Shot down by H. M. S. *Galatea* and *Phaeton*, and destroyed by submarine *E-31*.
29	?*	Salonika	5- 5-1916	Shot down by allied warships.
30	L-21*	Enfield, England	2- 9-1916	Shot down by aeroplane during raid on London.
31	L-32*	England	24- 9-1916	Shot down by anti-aircraft guns in Essex while returning from raid on London.
32	L-33*	England	24- 9-1916	
33	?*	England	1-10-1916	Shot down by gun fire while attempting to reach London.
34	?	Russia.....	—11-1916	Reported shot down by gun fire.
35	?*	England.....	28-11-1916	Shot down at sea by airplanes while returning from a cross channel raid.
36	?*	England.....	28-11-1916	
37	?	Germany.....	— 1-1917	Unconfirmed report that these two were destroyed by accidental burning of hangar.
38	?	Germany.....	— 1-1917	

* Destruction authenticated.

THE WRIGHT PATENTS.—The Wright-Martin Aircraft Company has relinquished the British Wright patents to that government and proposes that private manufacturers in the United States pay a license for the use of devices covered by the American patents. The company stipulates a minimum annual royalty of $10,000. Considerable opposition has developed among airplane manufacturers. The situation is well summarized in the following editorial from the *New York Herald* of December 21:

According to official reports our naval authorities seem to be agreed that for its purposes the development of air craft has not been commensurate with their wonderful usefulness as proved by the experiences of war. Finding it impossible to get what is needed at home they sought to obtain such machines abroad, where "the exigencies of war have stimulated talent and manufacture." But this also was impossible, so in lieu of taking inferior types the Navy Department has been forced to go slowly until its special problems are nearer solution.

Something of the same impulse may have inspired the Wright-Martin Aircraft Company in its proposed licensing plan. In a statement furnished the *Herald* and published yesterday the president of this corporation declared that despite the proved safety of flight in properly constructed machines it is impossible to assure such safety when the instrumentalities are imperfectly designed. Therefore he declares that some check must be placed on their production. To effect this the company has decided, first, to require manufacturers using their patents to take out a license, and, secondly, to grant such permission only to parties properly equipped financially and possessing the requisite engineering knowledge for producing normally safe machines and appliances.

Adverse criticism insists that the real intention of the license is to crush opposition and to destroy the smaller companies. This charge is no less insistently denied by the owners of the patents, who declare that their action is in the real interests of preparedness. Where the government and the people enter is through a desire to have the safety of the fliers assured, and thereby hope that the aeroplane business will be organized on lines which will produce the best possible types in time and in sufficient quantities to help safeguard the country when the hour of stress and storm approaches.

LESSONS OF THE WAR

INFLUENCE OF THE TORPEDO ON SHIP CONSTRUCTION.—Mr. Arthur Pollen, the naval expert of *Land and Water*, says:

". . . . . Meantime there is one technical point worth brief examination, to which the recent raid attracts our attention. In my article last week I drew attention to the fact that in the German account of the August sortie, in which *Falmouth* and *Nottingham* were torpedoed, it was asserted by the enemy that it took three torpedoes, fired at an interval of two hours between the first and the last, before *Falmouth* was sunk. It has been rumored that *Nottingham* had to be hit more often even than this before she was disposed of. Last week we learned that the *Muenchen* had been torpedoed by a submarine and had yet made her way home. These incidents are in line with a great many more narrated in the Jutland despatch. In that document, my readers will remember, Sir John Jellicoe and Sir David Beatty gave the details of 11 separate instances in which our destroyers fired torpedoes successfully against the German ships, and in only one instance, namely the attack led by Captain Ansalan Stirling, was it stated as certain that the torpedoed ship blew up. In all the other cases, many of which occurred in the course of the daylight action, it was not even claimed that the injured ship had to leave the line. In the British fleet, of course,

only *Marlborough* was hit, and the excellence of her shooting afterwards, and the ease with which she kept her place in the line and then made her way home under her own steam, were duly emphasized by the commander-in-chief. Last August year it may be remembered, the German battle cruiser *Moltke* was torpedoed in the Gulf of Riga and won back to Kiel all across the Baltic Sea without difficulty. Now the Admiralty communiqué tells us that the *Nubian*, whose sides and bulkheads must be of the frailest possible, not only survived torpedo attack, but was in a condition in which she could be towed home.

"All this stands in sharp contrast with the fate of the older vessels that fell to submarines in the earlier part of the war. *Aboukir, Cressy, Hogue, Niger, Hermes, Formidable, Triumph, Majestic* and the rest were utterly doomed from the moment they were hit. It seems clear then that during the last 10 years naval constructors have provided against underwater attack with very singular success. I am, of course, far from suggesting that a single torpedo *could* not possibly sink the stoutest battleship in the world. But it certainly is startling and, as it seems to me, extremely consoling, that here we have nearly 20 cases of modern ships being torpedoed, of which *only one* was known to have proved fatal. The experience of Jutland, then, is on all fours with an almost equal number of cases before and since, and this may not improbably prove one of the most important lessons of that most instructive engagement."

MISCELLANEOUS

ANOTHER SLIDE AT PANAMA.—On January 10 a slight movement of the old Cucaracha slide occurred, part of the bank breaking off and reducing the width of the channel, while an upheaval of the bottom reduced the depth. In two days, despite further slight movement of the slide, the channel had been cleared to a depth of 22 feet and a width of 100 feet.

CURRENT NAVAL AND PROFESSIONAL PAPERS

UNITED STATES

WORLD'S WORK. **January.**—The Next Five Years of the Navy, by *Rear Admiral Bradley A. Fiske.*

AVIATION. **December 15.**—Possible Improvements in Carrying Capacity and Speed of Rigid Airships, by *C. Dornier* (Count von Zeppelin's Engineer). A Time Controlled Aerial Torpedo, by *Willard G. Moore.*

FLYING. **January.**—Aeroplane *vs.* Captive Balloon, by *A French Officer.* The War in the Air, by *Ralph de Castro.*

SCIENTIFIC AMERICAN. **December 23.**—Present Status of Zeppelin Construction, by *L. d'Orcy.*

GREAT BRITAIN

NINETEENTH CENTURY AND AFTER. **December.**—A Sailor's Account of the Lowestoft Raid, by *Petty Officer H. J. G. Merrin.* Artillery Methods in Modern War, by *Capt. R. W. Hallows.*

FORTNIGHTLY REVIEW. **December.**—What is the Law of Nations? *Sir Frederick Pollock.* Sea Heresy, Invasion and Other Matters, by *Archibald Hurd.* The Cadet Movement in England, by *Capt. Cecil Price.* The Business of War, by *Lawrence Jerrold.*

THE ENGINEER. **December 8.**—German Torpedo Craft in the War (designs).

ENGINEERING. **December 8.**—Salvage Equipment for Raising Submarine *F-4*, U. S. Navy, by *Naval Constructor J. A. Furer*, U. S. Navy. The Naval War and the Size of Battleships, by *Wm. Hovgaard*.

LAND AND WATER. **November 30.**—German Reserves, by *Hillaire Belloc*. The New Warfare at Verdun, by *A. D. Fleurot*. The Coming Trade War, by *Arthur Kitson*. **December 7.**—Turning the Big Gun, by *Joseph Purnell*. State Control of Factories, by *A. Kitson*. Munition Making in America, by *L. R. Freeman*. The Arming of the Fleet, by *Arthur Pollen*.

CONTINENTAL EUROPE

RIVISTA MARITTIMA (Italy). **October.**—Submarines and the Laws of Naval Warfare, by *G. A. Rosso*.

REVUE DES DEUX MONDES (Paris). **December.**—Protection of Transports, by *Contre-Amiral Degouy*.

INTERNATIONAL NOTES

NAVAL WAR NOTES

Prepared by LIEUTENANT R. S. EDWARDS, U. S. Navy

BRITISH NAVAL STRATEGY

Mr. Archibald Hurd in *The Fortnightly Review* discusses the strategy of the British fleet and the effect of the Battle of Jutland as follows:

"The general naval policy of Germany has never been a secret. It has been stated, on the highest authority, that the German High Seas Fleet will not fight unless opportunity offers of engaging under favorable conditions, which means in the vicinity of the German coast where every advantage can be obtained from the employment of destroyers, submarines, mines, and aircraft. They realize the advantage, moreover, of having dockyards at hand to which crippled men-of-war can be taken. The enemy has attempted to entrap one or more sections of the Grand Fleet. There is no reason to doubt that it was with that idea that Admiral von Scheer put to sea on May 31. Informed of the dispositions of the Grand Fleet, he thought that he could overwhelm the battle cruiser squadrons before Admiral Jellicoe could reach the scene of action with his greatly superior force of battleships. The fighting was continued until the battle squadrons appeared, and then the Germans fled. What conclusion is to be drawn from that battle, which was mainly a running fight between battle cruisers, at least so far as the British were concerned? The Germans evaded our battleship squadrons, half an hour saving them from what would have probably been annihilation.

"A fight to a finish, if the Germans had any hope of success, was necessary for their salvation, but it was not necessary for ours. Before the fleets met in the North Sea we had little cause for discontent. All the world's oceans were open to us for use for naval, military, and commercial purposes, subject only to the restricted menace of submarines. If the Battle of Jutland had resulted in the extinction of the German High Seas Fleet, our position would not have been greatly altered; Germany would still have possessed in her destroyers, submarines, and mine-layers the only active element of her naval power; her coast defences—which she believes to be impregnable—would have remained. The great ships would have gone, and to that extent our great ships would have been set free. For what purpose could they have been used after the German High Seas Fleet had been destroyed? It must be apparent that the naval situation would not have

been greatly changed if the victory which Admirals Jellicoe and Beatty achieved had been so overwhelming as to wipe out every battleship and battle cruiser under the German ensign. We should have heaved a sigh of satisfaction and should have congratulated ourselves on a result of psychological importance. But the Germans would still have had their submarines, destroyers, and mines; the Baltic would have continued closed; the powerful guns and minefields off the German and Belgian coasts would still have remained.

"The suggestion that it was *not* absolutely necessary for the British to fight the Battle of Jutland, in conditions which exposed the British forces to considerable risk, has been denounced as sea heresy, representing a denial of the offensive traditions of the British Navy. What is the fact? Battles are not fought for the sake of fighting, and, in these days and under the present conditions, it is doubtful whether the stronger Power does gain much from victoriously engaging the enemy's weaker forces of battleships and cruisers. They may be sunk, but even then offensive-defensive elements remain—submarines, destroyers, mines, and coastal guns—and it is those elements which the weaker Power, having abandoned already the use of the oceans of the world, hopes to employ. A battle is fought for a specific purpose. That consists of the right to use the seas. We have been using the seas with a freedom which has never been known before during the progress of any war. If the High Seas Fleet were to disappear, what greater use could we make of the oceans of the world? That is the crucial test. No battle is unaccompanied by risk, and in the present circumstances the risks are not all on one side. The whole future of the Allies depends upon the efficiency and sufficiency of the Grand Fleet. If that fleet were defeated, although by no means annihilated—tricked into defeat by the Germans—the aspect of affairs throughout Europe and throughout the world would be changed. Everything depends on one factor, and therefore it must surely be evident that the officers commanding at sea must be ever on their guard against being drawn into action under conditions favorable to the enemy and deliberately planned by him. We have little to gain from a victory at sea, but everything to lose by a reverse. On the other hand, the Germans, full of devilish resource, as the war has revealed, have everything to gain and little to lose, beyond a number of ships which, except for a few costly excursions, have remained inactive in their ports. The strategy of the Grand Fleet must be defensive, but its tactics offensive. It must stand ready to refuse the Germans the right to use the seas—in other words, it must pursue the policy deliberately adopted in the early days of the war—it must control, and, under reasonable conditions, fight and defeat the enemy. The Grand Fleet, acting from its carefully chosen bases, challenges Germany to action, but it insists that the action shall be fought, if at all, on its conditions, imposed on the enemy in virtue both of its strength and its efficiency. In short, the position at sea may be summed up in a sentence—a battle to us would be a luxury, if a desirable luxury, for the mental relief which it would give, but to the Germans it is a necessity, if the iron dominion imposed upon Central Europe is to be broken before Germany and her partners fall crushed and ruined.

NAVAL OPERATIONS

FROM DECEMBER 14 TO JANUARY 17

ATLANTIC OCEAN

"SUFFREN" SUNK BY SUBMARINE.—The French battleship *Suffren*, reported missing in the last issue of the PROCEEDINGS, was sunk on November 26 off Lisbon by a German submarine, according to an official statement from Berlin.

SUBMARINES AND RAIDERS ON AMERICAN COAST.—Warnings of a German cruiser at large in the Atlantic were continued by the Allied fleet in the Western Atlantic during the past month. The radio warnings describe the vessel as 350 feet long with two masts and one funnel. German submarines are still reported in the Atlantic and the press says that Great Britain has met this danger by sending a fleet of heavily armed converted cruisers disguised as merchantmen to convoy vessels entering and leaving American waters. On January 11 the *New York Herald* published a dispatch saying that a German cruiser was supposed to be in the neighborhood of the Windward Passage and that all lighthouses under English control in that region had been darkened in consequence. There is an unconfirmed report that one German "commerce raider" was destroyed by British cruisers in the Atlantic early in January. The exact nature of the belligerent operations in the Western Atlantic is kept secret, England having decided as a protective measure to suppress all shipping reports except announcements of casualties. The dates of departure of British liners are no longer advertised, and their arrival and departure from British ports is no longer announced.

GERMAN SUBMARINES REPORTED SUNK.—Press dispatches from Paris and Amsterdam report that the German submarines *U-45* and *U-46* were sunk in the Bay of Biscay about December 20. There seems to be some doubt as to whether or not the dispatches refer to a single vessel, and the *New York Herald* says it may have been the *U-40*, which sank the *Columbian*. The German reply to these rumors is that the *U-46* returned safely to its home port.

NORTH SEA AND THE CHANNEL

TWO BRITISH DESTROYERS SUNK.—Two of his Majesty's torpedo-boat destroyers were sunk in collision in the North Sea on December 21 during very bad weather, resulting in the loss of six officers and 49 men.—*Government Press Bureau in Army and Navy Gazette.*

CRUISERS "SHANNON" AND "NEWCASTLE" REPORTED LOST.—Dispatches from German sources say that the *Shannon* and the *Newcastle* were sunk by mines in November. The British Admiralty denies the loss of these vessels.

DANES HEAR TWO ZEPPELINS WERE DESTROYED BY FIRE.—Two Zeppelins have been destroyed at Tondern, Schleswig, by a fire due to defective electric wiring in a recently constructed double shed, says a Reuter dispatch from Copenhagen, quoting *The Stifts Tidende* of Ribe, Jutland.—*New York Times*, 4/1.

ARCTIC OCEAN

German submarines are still reported to be operating in the Arctic Ocean, their activities being confined, apparently, to commerce destroying. The capture of one vessel near North Cape is reported from Berlin, the dispatch describing the prize as the *Spezia*, which formerly belonged to the Hamburg-American Line and was confiscated at Vladivostok at the beginning of the war by the Russians, and used to carry war material from the United States to Archangel.

MEDITERRANEAN SEA

TRANSPORTS SUNK.—The French transport *Magellan,* 6000 tons, was sunk by submarines off Malta on December 11, and the British horse transport *Russian* met a similar fate on December 14. On January 1, the *Ivernia,* a 14,000-ton Cunard liner in the British transport service, was torpedoed by a submarine somewhere in the Mediterranean and sank with the loss of four officers and 146 men.

"PATRIE" TORPEDOED?—An Associated Press dispatch from Amsterdam says that Berlin has officially announced that a French battleship of the *Patrie* class was badly damaged by a torpedo from a German submarine near Malta on December 12. This statement is denied by the French Admiralty.

AUSTRIAN DESTROYERS RAID OTRANTO STRAIT.—"On the night of December 22-23 four Austro-Hungarian destroyers made a raid in the Otranto Strait, and after an engagement sank two armed patrol boats. On their way back at least six hostile destroyers of greater size and speed, evidently of the *Indomito* class, blocked their way. A violent combat with guns ensued. One hostile destroyer was set on fire and three others were hit several times at short range. The enemy's sea forces, among which was one vessel of a more powerful and unknown type, were routed.

"One of our destroyers was hit twice in the funnel and another was hit in the superstructure. One man was killed. There were no wounded."

The *Indomito* class consists of 10 Italian destroyers 239 feet long, armed with one 4.7-inch gun and four 12-pounders.

The official Italian account of this engagement, received last night, said two French destroyers and one Italian patrol boat were damaged slightly. —*New York Herald.*

THE "GAULOIS" SUNK.—The French armored cruiser *Gaulois* was torpedoed in the Mediterranean Sea on December 27 and sank in half an hour, according to an official announcement made this morning. Owing to the coolness of the crew and the arrival of patrol boats there were only four victims, two of whom were killed by the explosion.

The *Gaulois* belongs to the huge "upper works" class of the late '90s, which produced her sister ships the *Charlemagne* and *St. Louis.* She was completed in 1899 and refitted in 1907. When sunk her armament was four 12-inch guns, 10 5.5-inch, eight 4-inch, 20 3-pounders, and four submerged torpedo tubes. The *Gaulois's* displacement was 11,260 tons, and she carried 631 officers and men.—*New York Times.*

BRITISH BATTLESHIP AND SEAPLANE TENDER SUNK.—A British Admiralty announcement says: "H. M. S. *Cornwallis* was sunk by an enemy submarine on January 9 in the Mediterranean. The captain and all the officers are saved, but there are 13 men missing, and it is feared they were killed by the explosion.

"H. M. seaplane carrier *Ben-my-Chree* was sunk by gunfire in Kastelorizo Harbor, Asia Minor, on January 11. The only casualties were one officer and four men."

Brassey's Annual says that the *Cornwallis* is a 14,000-ton battleship completed in 1904.

ITALIAN DESTROYER SUNK.—Berlin reports that an Italian destroyer was sunk off the island of Corfu early in December.

ITALIANS CAPTURE AUSTRIAN SUBMARINES.—The Italian War Office on January 14 reported the capture of the Austrian submarines *VT-12* and *VC-12*. The latter is said to be an ex-German craft, ceded to Austria-Hungary since the outbreak of the war.

THE FAR EAST

THE "TSUKUBA" BLOWN UP.—The Japanese cruiser *Tsukuba* was destroyed by an explosion on January 13 in the harbor of Yokosuka, an important naval station 13 miles southwest of Yokohama. Fire on the *Tsukuba* caused the magazine to blow up.

One hundred and fifty-three of the crew of the *Tsukuba* were killed and 157 injured, many of them seriously.

Many men were rescued from the water. Most of the officers of the cruiser were ashore.

The cause of the fire is not known.—*New York Herald*.

The *Tsukuba* was an armored cruiser of 13,750 tons displacement built at Kure in 1907. She had a 7-inch armor belt, mounted four 12-inch guns and her trial speed was 21 knots. She is sometimes referred to as a battle cruiser.

INDEX OF WAR VESSEL LOSSES MENTIONED IN THIS NUMBER

NOTE.—A complete table of losses since the beginning of the war is published quarterly; the latest appears in the January number of the PROCEEDINGS.

DIPLOMATIC NOTES

FROM DECEMBER 15 TO JANUARY 18

Prepared by A. F. WESTCOTT, PH. D., Instructor, U. S. Naval Academy

PRESIDENT WILSON'S NOTE TO BELLIGERENTS

On **December 18** President Wilson addressed a note to all belligerent nations, and sent copies for the information of neutrals, suggesting "an avowal of their respective views as to the terms upon which the war might be concluded." While remarking that "the objects, which the statesmen of the belligerents on both sides have in mind in this war, are virtually the same, as stated in general terms to their own people and to the world," the note later adds that "the concrete objects have never been definitely stated."

THE PRESIDENT'S NOTE

(The words in brackets in the third paragraph were omitted in the copies to the Entente Powers)

"DEPARTMENT OF STATE, WASHINGTON, D. C., Dec. 18, 1916.

"The President directs me to send you the following communication to be presented immediately to the Minister of Foreign Affairs of the government to which you are accredited:

"The President of the United States has instructed me to suggest to the [here is inserted a designation of the government addressed] a course of action with regard to the present war, which he hopes that the government will take under consideration as suggested in the most friendly spirit, and as coming not only from a friend but also as coming from the representative of a neutral nation whose interests have been most seriously affected by the war and whose concern for its early conclusion arises out of a manifest necessity to determine how best to safeguard those interests if the war is to continue.

"The suggestion which I am instructed to make the President has long had it in mind to offer. He is somewhat embarrassed to offer it at this particular time, because it may now seem to have been prompted by [a desire to play a part in connection with] the recent overtures of the Central Powers. It has, in fact, been in no way suggested by them in its origin, and the President would have delayed offering it until those overtures had been [independently] answered but for the fact that it also concerns the question of peace and may best be considered in connection with other proposals which have the same end in view. The President can only beg that his suggestion be considered entirely on its own merits and as if it had been made in other circumstances.

"The President suggests that an early occasion be sought to call out from all the nations now at war such an avowal of their respective views as to the terms upon which the war might be concluded and the arrangements which would be deemed satisfactory as a guaranty against its renewal or the kindling of any similar conflict in the future as would make it possible frankly to compare them. He is indifferent as to the means taken to accomplish this. He would be happy himself to serve, or even to take the initiative in its accomplishment, in any way that might prove acceptable, but he has no desire to determine the method or the instrumentality. One way will be as acceptable to him as another, if only the great object he has in mind be attained.

"He takes the liberty of calling attention to the fact that the objects, which the statesmen of the belligerents on both sides have in mind in this war, are

virtually the same, as stated in general terms to their own people and to the world. Each side desires to make the rights and privileges of weak peoples and small states as secure against aggression or denial in the future as the rights and privileges of the great and powerful states now at war. Each wishes itself to be made secure in the future, along with all other nations and peoples, against the recurrence of wars like this and against aggression or selfish interference of any kind. Each would be jealous of the formation of any more rival leagues to preserve an uncertain balance of power amid multiplying suspicions; but each is ready to consider the formation of a league of nations to insure peace and justice throughout the world. Before that final step can be taken, however, each deems it necessary first to settle the issues of the present war upon terms which will certainly safeguard the independence, the territorial integrity, and the political and commercial freedom of the nations involved.

"In the measures to be taken to secure the future peace of the world the people and government of the United States are as vitally and as directly interested as the governments now at war. Their interest, moreover, in the means to be adopted to relieve the smaller and weaker peoples of the world of the peril of wrong and violence is as quick and ardent as that of any other people or government. They stand ready, and even eager, to co-operate in the accomplishment of these ends, when the war is over, with every influence and resource at their command. But the war must first be concluded. The terms upon which it is to be concluded they are not at liberty to suggest; but the President does feel that it is his right and his duty to point out their intimate interest in its conclusion, lest it should presently be too late to accomplish the greater things which lie beyond its conclusion, lest the situation of neutral nations, now exceedingly hard to endure, be rendered altogether intolerable, and lest, more than all, an injury be done civilization itself which can never be atoned for or repaired.

"The President therefore feels altogether justified in suggesting an immediate opportunity for a comparison of views as to the terms which must precede those ultimate arrangements for the peace of the world, which all desire and in which the neutral nations as well as those at war are ready to play their full responsible part. If the contest must continue to proceed toward undefined ends by slow attrition until the one group of belligerents or the other is exhausted; if million after million of human lives must continue to be offered up until on the one side or the other there are no more to offer; if resentments must be kindled that can never cool and despairs engendered from which there can be no recovery, hopes of peace and of the willing concert of free peoples will be rendered vain and idle.

"The life of the entire world has been profoundly affected. Every part of the great family of mankind has felt the burden and terror of this unprecedented contest of arms. No nation in the civilized world can be said in truth to stand outside its influence or to be safe against its disturbing effects. And yet the concrete objects for which it is being waged have never been definitely stated.

"The leaders of the several belligerents have, as has been said, stated those objects in general terms. But, stated in general terms, they seem the same on both sides. Never yet have the authoritative spokesmen of either side avowed the precise objects which would, if attained, satisfy them and their people that the war had been fought out. The world has been left to conjecture what definitive results, what actual exchange of guaranties, what political or territorial changes or readjustments, what stage of military success, even, would bring the war to an end.

"It may be that peace is nearer than we know; that the terms which the belligerents on the one side and on the other other would deem it necessary to insist upon are not so irreconcilable as some have feared; that an interchange of views would clear the way at least for conference and make the permanent concord of the nations a hope of the immediate future, a concert of nations immediately practicable.

"The President is not proposing peace; he is not even offering mediation. He is merely proposing that soundings be taken in order that we may learn, the neutral nations with the belligerent, how near the haven of peace may be for which all mankind longs with an intense and increasing longing. He believes that the spirit in which he speaks and the objects which he seeks will be understood by all concerned, and he confidently hopes for a response which will bring a new light into the affairs of the world.

"LANSING."

—*New York Times*, 21/12.

SECRETARY LANSING'S EXPLANATIONS.—On **December 20,** when the President's note was made public, Secretary Lansing issued two statements regarding its purpose, the second correcting a wrong impression made by the first. Though the statements aroused much comment, neither contains ideas that are not clearly implied in the note itself. The first statement reads:

"The reasons for the sending of the note were as follows:

"It isn't our material interest we had in mind when the note was sent, but more and more our own rights are becoming involved by the belligerents on both sides, so that the situation is becoming increasingly critical.

"I mean by that that we are drawing nearer the verge of war ourselves, and therefore we are entitled to know exactly what each belligerent seeks, in order that we may regulate our conduct in the future.

"No nation has been sounded. No consideration of the German overtures or of the speech of Lloyd George was taken into account in the formulation of the document. The only thing the overtures did was to delay it a few days. It was not decided to send it until Monday. Of course, the difficulties that faced the President were that it might be construed as a movement toward peace and in aid of the German overtures. He specifically denies that that was the fact in the document itself.

"The sending of this note will indicate the possibility of our being forced into the war. That possibility ought to serve as a restraining and sobering force, safeguarding American rights. It may also serve to force an earlier conclusion of the war. Neither the President nor myself regard this note as a peace note; it is merely an effort to get the belligerents to define the end for which they are fighting."

Later in the day the Secretary issued the following statement:

"I have learned from several quarters that a wrong impression was made by the statement which I made this morning, and I wish to correct that impression.

"My intention was to suggest the very direct and necessary interest which this country, as one of the neutral nations, has in the possible terms which the belligerents may have in mind, and I did not intend to intimate that the government was considering any change in its policy of neutrality, which it has consistently pursued in the face of constantly increasing difficulties.

"I regret that my words were open to any other construction, as I now realize that they were. I think that the whole tone and language of the note to the belligerents show the purpose without further comment on my part. It is needless to say that I am unreservedly in support of that purpose and hope to see it accepted."

THE GERMAN REPLY.—On **December 26** the Central Powers, in messages of similar purport, replied to the President's note by expressing the opinion that terms could best be presented in "an immediate meeting of delegates of the belligerent states at some neutral place." Germany's note follows:

"The high-minded suggestion made by the President of the United States of America in order to create a basis for the establishment of lasting peace has been received and considered by the Imperial Government in the friendly spirit in which it is expressed.

"In the President's communication the President points out that which he has at heart and leaves open the choice of the road. To the Imperial Government an immediate exchange of views seems to be the most appropriate road in order to reach the desired result. It begs, therefore, in the sense of the declaration made on December 12, which held out a hand for peace negotiations, to propose an immediate meeting of delegates of the belligerent states at some neutral place.

"The Imperial Government is also of opinion that the great work of preventing future wars can be begun only after the end of the present struggle of nations. It will, when the moment shall have come, be ready with pleasure to collaborate fully with the United States in this exalted task."

The note concludes in the usual diplomatic terms of politeness.

THE ENTENTE REPLY.—After considerable delay, the Entente Powers on **January 10** presented a joint note in response to the President's proposal of **December 18.** Concurring in the hope of securing an enduring peace, the note expressed the belief that "it is impossible at the present moment to attain a peace . . . . which would permit the establishment of the future of European nations on a solid basis." After condemning the objects and methods of the Central Powers, it proceeds, in the third paragraph from the end, to give a concrete statement of the objects of the Entente in the war.

The following is the translation of the French note:

"AMERICAN EMBASSY, PARIS, Jan. 10, 1917.

"The allied governments have received the note which was delivered to them in the name of the government of the United States on the 19th of December, 1916. They have studied it with the care imposed upon them both by the exact realization which they have of the gravity of the hour and by the sincere friendship which attaches them to the American people.

"In a general way they wish to declare that they pay tribute to the elevation of the sentiment with which the American note is inspired and that they associate themselves, with all their hopes, with the project for the creation of a league of nations to insure peace and justice throughout the world. They recognize all the advantages for the cause of humanity and civilization which the institution of international agreements, destined to avoid violent conflicts between nations would prevent—agreements which must imply the sanctions necessary to insure their execution, and thus to prevent an apparent security from only facilitating new aggressions.

"But a discussion of future arrangements destined to insure an enduring peace presupposes a satisfactory settlement of the actual conflict. The Allies have as profound a desire as the government of the United States to terminate as soon as possible a war for which the Central Empires are responsible, and which inflicts such cruel sufferings upon humanity. But they believe that it is impossible at the present moment to attain a peace which will assure them reparation, restitution, and such guarantees to which they are entitled by the aggression for which the responsibility rests with the Central Powers, and of which the principle itself tended to ruin the security of Europe—a peace which would, on the other hand, permit the establishment of the future of European nations on a solid basis. The allied nations are conscious that they are not fighting for selfish interests, but, above all, to safeguard the independence of peoples, of right, and of humanity.

"The Allies are fully aware of the losses and suffering which the war causes to neutrals as well as to belligerents, and they deplore them, but they do not hold themselves responsible for them, having in no way either willed or provoked this war; and they strive to reduce these damages in the measure compatible with the inexorable exigencies of their defense against the violence and the wiles of the enemy.

"It is with satisfaction, therefore, that they take note of the declaration that the American communication is in nowise associated in its origin with that of the Central Powers transmitted on the 18th of December by the government of the United States. They did not doubt, moreover, the resolution of that government to avoid even the appearance of a support, even moral, of the authors responsible for the war.

"The allied governments believe that they must protest in the most friendly but in the most specific manner against the assimilation, established in the American note, between the two groups of belligerents; this assimilation, based upon public declarations by the Central Powers, is in direct opposition to the evidence, both as regards responsibility for the past and as concerns guarantees for the future; President Wilson, in mentioning it, certainly had no intention of associating himself with it.

"If there is a historical fact established at the present date, it is the willful aggression of Germany and Austria-Hungary to insure their hegemony over Europe and their economic domination over the world. Germany proved by her declaration of war, by the immediate violation of Belgium and Luxemburg, and by her manner of conducting the war, her simulating contempt for all principles of humanity and all respect for small states. As the conflict developed, the attitude of the Central Powers and their allies has been a continual defiance of humanity and civilization.

"Is it necessary to recall the horrors which accompanied the invasion of Belgium and of Serbia, the atrocious régime imposed upon the invaded countries, the massacre of hundreds of thousands of inoffensive Armenians, the barbarities perpetrated against the populations of Syria, the raids of Zeppelins on open towns, the destruction by submarines of passenger steamers and of merchantmen even under neutral flags, the cruel treatment inflicted upon prisoners of war, the juridical murders of Miss Cavell, of Captain Fryatt, the deportation and the reduction to slavery of civil populations, *et cetera?* The execution of such a series of crimes, perpetrated without any regard for universal reprobation, fully explains to President Wilson the protest of the Allies.

"They consider that the note which they sent to the United States in reply to the German note will be a response to the questions put by the American Government, and, according to the exact words of the latter, 'constitute a public declaration as to the conditions upon which the war could be terminated.'

"President Wilson desires more: he desires that the belligerent powers openly affirm the objects which they seek by continuing the war; the Allies experience no difficulty in replying to this request. Their objects in the war are well known; they have been formulated on many occasions by the chiefs of their divers governments. Their objects will not be made known in detail with all the equitable compensation and indemnities for damages suffered until the hour of negotiations. But the civilized world knows that they imply, in all necessity and in the first instance, the restoration of Belgium, of Serbia, and of Montenegro, and the indemnities which are due them; the evacuation of the invaded territories of France, of Russia, and of Rumania, with just reparation; the reorganization of Europe, guaranteed by a stable régime and founded as much upon respect of nationalities and full security and liberty of economic development, which all nations, great or small, possess, as upon territorial conventions and international agreements, suitable to guarantee territorial and maritime frontiers against unjustified attacks; the restitution of provinces or territories wrested in the past from the Allies by force or against the will of

their populations; the liberation of Italians, of Slavs, of Rumanians, and of Tcheco-Slovaques from foreign domination; the enfranchisement of populations subject to the bloody tyranny of the Turks; the expulsion from Europe of the Ottoman Empire, decidedly alien to Western civilization. The intentions of his Majesty, the Emperor of Russia, regarding Poland have been clearly indicated in the proclamation which he has just addressed to his armies.

"It goes without saying that if the Allies wish to liberate Europe from the brutal covetousness of Prussian militarism it never has been their design, as has been alleged, to encompass the extermination of the German peoples and their political disappearance. That which they desire above all is to insure a peace upon the principles of liberty and justice, upon the inviolable fidelity to international obligations with which the government of the United States has never ceased to be inspired.

"United in the pursuit of this supreme object, the Allies are determined, individually and collectively, to act with all their power and to consent to all sacrifices to bring to a victorious close a conflict upon which, they are convinced, not only their own safety and prosperity depend, but also the future of civilization itself.

SEPARATE REPLY FROM BELGIUM.—Belgium, in a separate reply of the same date **(January 10)**, protested against any implication that the objects of the opposing powers were similar, and supported her protest by reciting the circumstances which forced her to enter the war. The note closed with the hope of support from the United States in securing restoration and reparation for Belgium in the definitive settlement of the war.

SEPARATE REPLY FROM GREAT BRITAIN.—The press of **January 18** published an additional note from Mr. Balfour, British Foreign Minister, dated **January 13,** and supplementing the Entente note of **January 10.** The British statement is a defense of the Entente terms, including the expulsion of Turkey from Europe, the restoration of Alsace-Lorraine to France, and Italia Irredenta to Italy. The note closes as follows:

"Though, therefore, the people of this country share to the full the desire of the President for peace, they do not believe peace can be durable if it be not based on the success of the allied cause. For a durable peace can hardly be expected unless three conditions are fulfilled: The first is that existing causes of international unrest should be as far as possible removed or weakened; the second is that the aggressive aims and the unscrupulous methods of the Central Powers should fall into disrepute among their own peoples; the third is that behind international law and behind all treaty arrangements for preventing or limiting hostilities some form of international sanction should be devised which would give pause to the hardiest aggressor."

RESPONSES FROM NEUTRALS.—Copies of President Wilson's request for a statement of aims on the part of belligerents were sent to neutral governments for their information. The replies were in general non-committal. Switzerland **(December 25)** noted that the two republics had been for some time in touch with each other, and frankly pledged the Swiss Government's cooperation in the President's efforts. Spain in a note dated **December 29,** assuming from the manner in which the President's message was presented that her cooperation was invited, expressed sympathy with the movement but a belief that "the action in which Spain is invited to participate would

not be effective, especially as the Central Empires have expressed their intention that the peace conditions shall be accorded exclusively among the belligerents." The language of the identical notes sent by Norway, Sweden, and Denmark **(December 29)** was as follows:

"It is with the liveliest interest that the Norwegian Government has learned of the proposals which the President of the United States has just made with the purpose of facilitating measures looking toward the establishment of a durable peace, while at the same time seeking to avoid any interference which could cause offense to legitimate sentiments.

"The Norwegian Government would consider itself failing in its duties toward its own people and toward humanity if it did not express its deepest sympathy with all efforts which would contribute to put an end to the ever-increasing suffering and the moral and material losses. It has every hope that the initiative of President Wilson will arrive at a result worthy of the high purpose which inspires it.

ENTENTE REPLY TO GERMAN PROPOSAL FOR PEACE CONFERENCE

The attitude of the Entente Powers toward the enemy's proposal for a conference of belligerents was clearly indicated by Premier Lloyd George's first speech to the British Parliament on **December 19.** The Premier in this speech outlined plans for vigorous prosecution of the war, and reiterated the terms put forward by his predecessor: "Restitution, reparation, guarantees against repetition."

The reply itself took the form of a collective note made public in Paris and London **December 30.** After declaring that a proposal for negotiations was "less an offer of peace than a war maneuver," the note seeks to show that the war was "desired, provoked, and declared by Germany," and thereupon refuses "to consider a proposal which is empty and insincere." The last part of the note deals entirely with Belgium.

The text:

"The allied governments of Belgium, France, Great Britain, Italy, Japan, Montenegro, Portugal, Rumania, Russia, and Serbia, united for the defense of the liberty of their peoples and faithful to engagements taken not to lay down their arms separately, have resolved to reply collectively to the pretended propositions of peace which were addressed to them on behalf of the enemy governments through the intermediary of the United States, Spain, Switzerland, and Holland.

"Before making any reply, the allied powers desire particularly to protest against the two essential assertions of the notes of the enemy powers that pretend to throw upon the Allies responsibility for the war and proclaim the victory of the Central Powers. The allied governments cannot admit an affirmation doubly inexact and which suffices to render sterile all tentative negotiations. The allied nations have sustained for 30 months a war they did everything to avoid. They have shown by their acts their attachment to peace. That attachment is as strong to-day as it was in 1914. But it is not upon the word of Germany, after the violation of its engagements, that the peace broken by her may be based.

"A mere suggestion without a statement of terms, that negotiations should be opened, is not an offer of peace. The putting forward by the Imperial Government of a sham proposal lacking all substance and precision would appear to be less an offer of peace than a war maneuver. It is founded on calculated misinterpretation of the character of the struggle in the past, the present, and the future.

"As for the past, the German note takes no account of the facts, dates, and figures, which establish that the war was desired, provoked, and declared by Germany and Austria-Hungary.

"At The Hague Conference it was a German delegate who refused all proposals for disarmament. In July, 1914, it was Austria-Hungary, who, after having addressed to Serbia an unprecedented ultimatum, declared war upon her in spite of the satisfaction which had at once been accorded.

"The Central Empires then rejected all attempts made by the Entente to bring about a pacific solution of a purely local conflict. Great Britain suggested a conference; France proposed an international commission; the Emperor of Russia asked the German Emperor to go to arbitration, and Russia and Austria-Hungary came to an understanding on the eve of the conflict. But to all these efforts Germany gave neither answer nor effect.

"Belgium was invaded by an empire which had guaranteed her neutrality and which had the assurance to proclaim that treaties were 'scraps of paper,' and that 'necessity knows no law.'

"At the present moment these sham offers on the part of Germany rest on the war map of Europe alone, which represents nothing more than a superficial and passing phase of the situation and not the real strength of the belligerents. A peace concluded upon these terms would be only to the advantage of the aggressors, who, after imagining that they would reach their goal in two months, discovered after two years, that they could never attain it.

"As for the future, the disasters caused by the German declaration of war and the innumerable outrages committed by Germany and her allies against both belligerents and neutrals demand penalties, reparation and guarantees. Germany avoids mention of any of these.

"In reality these overtures made by the Central Powers are nothing more than a calculated attempt to influence the future course of war and to end it by imposing a German peace. The object of these overtures is to create dissension in public opinion in the allied countries. But that public opinion has, in spite of all the sacrifices endured by the Allies, already given its answer with admirable firmness, and has denounced the empty pretense of the declaration of the enemy powers.

"They [the peace overtures] have the further object of stiffening public opinion in Germany and in the countries allied to her—one and all severely tried by their losses, worn out by economic pressure and crushed by the supreme effort which has been imposed upon their inhabitants.

"They endeavor to deceive and intimidate public opinion in neutral countries, whose inhabitants have long since made up their minds where the initial responsibilities lie and are far too enlightened to favor the designs of Germany by abandoning the defense of human freedom.

"Finally, these overtures attempt to justify in advance in the eyes of the world a new series of crimes—submarine warfare, deportations, forced labor and forced enlistment of the inhabitants against their own countries, and violations of neutrality.

"Fully conscious of the gravity of this moment, but equally conscious of its requirements, the allied governments, closely united to one another and in perfect sympathy with their peoples, refuse to consider a proposal which is empty and insincere.

"Once again the Allies declare that no peace is possible so long as they have not secured reparation for violated rights and liberties, the recognition of the principle of nationality and of the free existence of small states, so long as they have not brought about a settlement calculated to end once and for all forces which have constituted a perpetual menace to the nations, and to afford the only effective guarantee for the future security of the world.

"In conclusion, the allied powers think it necessary to put forward the following considerations, which show the special situation of Belgium after two and a half years of war. In virtue of the international treaties signed

by five great European powers, of which Germany was one, Belgium enjoyed before the war a special status, rendering her territory inviolable and placing her, under the guarantee of the powers, outside all European conflicts. She was, however, in spite of these treaties, the first to suffer the aggression of Germany. For this reason the Belgian Government thinks it necessary to define the aims which Belgium has never ceased to pursue while fighting side by side with the Entente Powers for right and justice.

"Belgium has always scrupulously fulfilled the duties which her neutrality imposed upon her. She has taken up arms to defend her independence and her neutrality violated by Germany and to show that she remains faithful to her international obligations.

"On the 4th of August, 1914, in the Reichstag the German Chancellor admitted that this aggression constituted an injustice, contrary to the laws of nations, and pledged himself in the name of Germany to repair it. During two and a half years this injustice has been cruelly aggravated by the proceedings of the occupying forces, which have exhausted the resources of the country, ruined its industries, devastated its towns and villages, and have been responsible for innumerable massacres, executions and imprisonments.

"At this very moment, while Germany is proclaiming peace and humanity to the world, she is deporting Belgian citizens by thousands and reducing them to slavery.

"Belgium before the war asked for nothing but to live in harmony with her neighbors. Her King and her government have but one aim—the reestablishment of peace and justice. But they only desire peace which would assure to their country legitimate reparation, guarantees and safeguards for the future."—*N. Y. Times*, 31/12.

ENTENTE CONFERENCE AT ROME

A conference of Entente ministers and military leaders was held in Rome during the week ending **January 6.** Though the results are not disclosed, the object of the conference was presumably to supplement unity of aims with better coordination of action on the various fronts, and in particular to agree on a more positive policy in Greece. It is significant that General Sarrail was present at the conference, and that on **December 31** a new ultimatum was dispatched to Greece.

BRITISH IMPERIAL WAR CONFERENCE

Great Britain has issued a call to the prime ministers of her self-governing dominions for a war conference to be held the latter part of February. The purpose is indicated by the telegram sent out by the Colonial Secretary on **December 25:**

"I wish to explain that what his Majesty's government contemplates is not a session of the ordinary Imperial Conference, but a special war conference of the empire. They, therefore, invite your Prime Minister to attend a series of special and continuous meetings of the War Cabinet, in order to consider urgent questions affecting the prosecution of the war, the possible conditions on which, in agreement with our allies, we could assent to its termination, and the problems which will then immediately arise. For the purpose of these meetings your Prime Minister would be a member of the War Cabinet.—*London Times*, 27/12.

PENDING SUBMARINE CONTROVERSIES

"ARABIA"

According to a statement issued by Secretary Lansing on **December 23**, the Department of State had received information from the British Government that the P. and O. liner *Arabia*, torpedoed **November 6**, was not and had not been a government transport, though she carried some passengers traveling at government expense.

"COLUMBIAN"

The German reply to inquiries of the United States regarding the American steamship *Columbian*, sunk in the Mediterranean **November 8**, was made public **December 19**. The reply justified the destruction of the vessel on the grounds: (1) that, contrary to the American statement, the vessel carried a cargo of steel and other war materials destined for Genoa; and (2) that, after having first been dismissed by the submarine, the vessel sent out wireless calls conveying information to the enemy. The vessel was then stopped, her papers were examined, and she was sunk the following day. The crew were put aboard a Norwegian ship and landed at the Bay of Camarinas, Spain.

"RUSSIAN"

The British steamer *Russian*, having landed a cargo of horses at Salonika, and while returning to Newport News, was torpedoed on **December 14** near Malta. In the heavy seas and darkness, one of the lifeboats capsized with the loss of 28 men, including 17 American muleteers. A detailed report from the American Consul at Malta was made public **December 21.**

CAPTAIN BLAIKIE

According to a report from the U. S. Embassy at Berlin (**December 19**), the German Government has decided that Captain Blaikie, accused of attempting to ram a German submarine, should be held as an ordinary prisoner of war. The decision is based on the ground that Captain Blaikie's ship, the *Caledonia*, was an armed cruiser, and that the captain was carrying out his duty as a belligerent.

CABINET CHANGES

AUSTRIA

Following the fall of the von Körber Cabinet, and the failure of Alexander Spitzmüller, leader of the more strongly Germanistic element in Austria, to secure a ministry, the task was turned over to Count Clam-Martinitz, a Bohemian.

The *London Times* (**December 22**), in giving the cabinet appointments, adds the following comment:

"Should the Clam-Martinitz Cabinet be formed, and should it include Dr. Baernreither, it would probably represent a less drastic policy of Germanization in Austria than would have been represented by a Spitzmüller Cabinet. From information given by the Austrian press and con-

firmed from other sources, it is clear that the fall of Dr. von Körber was due to his stand against a scheme of ruthless Germanization. The scheme appears to have contemplated the complete exclusion of the Slav provinces of Galicia and Dalmatia from Austria proper, the reorganization of administrative districts in Bohemia so as to place the Czechs at the mercy of the Germans, and the proclamation of German as the language of state in Austria instead of the eight Austrian languages (German, Polish, Ruthenian, Czech, Slovene, Italian, Serbo-Croatian, and Rumanian) which have hitherto enjoyed equal official recognition, though German has naturally been the predominant tongue and the general medium of intercourse."

FRANCE

By decrees of **December 27** the title of Marshal of France was revived to honor General Joffre and he was retired from active participation in the war councils. The control of the war is in the hands of the War Committee, consisting, as stated in the preceding issue of the INSTITUTE, of the President, Premier, and Ministers of War, Marine, National Manufactures, and Finance.

RUSSIA

The latest of the extraordinary convulsions in the Russian Government was the resignation **(January 9)** of the Russian Premier, Alexander Trepoff, and the Minister of Public Instruction, Count Ignatieff, after less than two months in office. M. Trepoff, whose appointment was regarded as a victory for the Duma, is succeeded by Prince Golitzine, 56 years of age, a member of the extreme conservative and reactionary group. While announcing that all efforts are to be centered in the prosecution of the war, the new Premier is averse to present internal reforms and to parliamentary interference. His views are in accord with those of M. Protopopoff, Minister of the Interior, who was an element of discord in Trepoff's Cabinet and who is regarded as dominant in the present ministry.

According to a report from Berlin **(January 12)**, the fall of Trepoff was connected with the murder of the monk Gregory Rasputin. Attempts to shield those responsible for the murder led the Czar to take a decisive stand against radical elements.

TURKEY

According to a note received in Washington on January 1, Turkey repudiates the guardianship of the great Powers and proclaims her "entry into the group of European Powers, with all the rights and prerogatives of an entirely independent government." The Ottoman Government repudiates the Treaty of Paris of 1856 and the Treaty of Berlin of 1878, and announces that it has allied itself with Germany and Austria-Hungary "on a footing of entire equality."—*N. Y. Nation*, 4/1.

GREECE

On **December 31** Great Britain, France, and Russia presented a collective note to Greece again insisting on execution of the demands of the Allies, including transportation to the Peloponnessus of all cannon, machine guns, and surplus munitions, prohibition of meetings of reservists north of the Isthmus of Corinth, establishment of Allies' control, and apology and

reparation for the clash with Allies' forces **December** 1 and 2. The note pledged the Allies to maintain the neutral zone between Royalist and Venizelist forces, and stated that the blockade would be continued until satisfaction was accorded.

The Greek reply was at first evasive, but according to later dispatches (**January** 17) the Greek Government accepted the Entente demands in their entirety, including the immediate release of Venizelist prisoners.

On **January** 1 Great Britain announced the appointment of Earl Granville, Counsellor of the British Embassy at Paris, as diplomatic representative to the Venizelos Government. France appointed Robert de Billy, Counsellor at Rome, to similar duties.

MEXICO

On **January** 15 the American-Mexican Joint Commission was formally dissolved. The American commissioners recommended that an ambassador be sent to Mexico to resume negotiations, in particular regarding an international claims commission, protection of American life and property in Mexico, and protection of the border.

REVIEW OF BOOKS

ON

SUBJECTS OF PROFESSIONAL INTEREST

"Inside the German Empire." By Herbert Bayard Swope. 400 pages; 16 illustrations. Price $2.00 net. (New York: The Century Company, 1917.)

An interesting outline of existing conditions from within the German Empire as seen by an American and set forth in a dispassionate style flowing with the undercurrent of the German point of view.

Mr. Swope expresses no personal opinions nor draws conclusions as to final outcome. He visualizes the present every-day life in the heart of the empire and strikingly records facts collected along the western battle lines. His manner of presentation is most stimulating and is a decided relief from the usual treatment of the many side lights on the great war. H. S. C.

"Examples in Alternating Currents." Volume I. F. E. Austin. Second ed. 220 pages; illustrated. Leather, $2.40. (New Hampshire: 1916.)

The introductory pages of this book present those principles of geometry, trigonometry and calculus which are of most importance in electrical engineering; following these examples in pure mathematics there are given 57 electrical problems well chosen to illustrate the fundamentals of alternating currents. A number of pages are devoted to tables which provide short cuts in arithmetical work.

The diagrams, always an important part of an electrical problem, are especially helpful, and the explanations of mathematical processes are so clear as to make this book valuable both to students who have the guidance of a teacher and to those who are attempting to study electricity by themselves. J. B. A.

"How to Make Low-Pressure Transformers." Prof. F. E. Austin. Third ed. 29 pages; illustrated. 40 cents. (New Hampshire: 1916.)

This book tells very completely, and in simple language, how to construct a transformer to reduce the pressure from 110 volts to about 8 volts, as a minimum, for experimental purposes.

The author explains, step by step, how to construct a highly efficient transformer having a ring-shaped core and a secondary winding provided with taps for producing a variety of voltages. Directions are also given for building a transformer having a rectangular core, with coils wound on removable bobbins in order that the effect of various windings may be studied.

Calculations are made to determine the cost of operation, to explain such terms as efficiency and regulation, and to show how the design may be modified where it is desired to operate the transformer on 220 volts.

J. B. A.

"The Boy's Book of Famous Warships." By William O. Stevens, Professor of English, United States Naval Academy. 236 pages. Price $1.60. (New York: McBride & Co., 1916.)

To write in a simple, familiar way, and yet to avoid the condescending, "Now my little readers" style, is the achievement of not every book for boys. Mr. Stevens' present volume has this merit; and, like his *Story of Our Navy* (Harpers), it does worthy service in gratifying the eagerness of youngsters for books about battles and about the sea.

Taking his examples from all periods, and writing from ample historical knowledge, the author gives a good bird's-eye view of naval warfare from Salamis to present times. Down to the *Victory* or even the *Monitor,* the famous ships are also typical war-craft of their periods and fought in battles of historic importance. From this point of view, it is unfortunate that the *Emden,* whose exploits are related in the last chapter, is not a better example of modern naval progress.

From an international standpoint, also, the book may appear a bit one-sided. Of the 14 ships whose careers are outlined, six are British and six American; but there is no representative of Holland, France, or Spain, though these nations in their day were formidable rivals of Britain for sea control. Were the ships nameless in which the elder Tromp and De Ruyter first made naval warfare a science and fought valiantly against England and her allies? For the sake of variety, would it not have been well to chronicle the five or six hard-fought engagements of Suffren's flagship *Héros,* in which the greatest of French admirals shook British power in the East, and once inflicted on his opponent losses exceeding those of the *Victory* at Trafalgar?

But in naval matters, Britain has always claimed the lion's share; and since this book is for American boys, it is no doubt right that half of its pages should be devoted to the stirring deeds of our own ships, from the *Constitution* and *Essex* to the *Alabama* and the little *Hunley*—the first successful submarine. The book closes with an axiom that time has not deprived of its force: "It is still true now as it was in the days of the oar that the things that make a man-of-war famous are the courage, initiative, and skill of the officers and men who fight on her decks." A. F. W.

NOTICE

The U. S. Naval Institute was established in 1873, having for its object the advancement of professional and scientific knowledge in the Navy. It is now in its forty-fourth year of existence, trusting as heretofore for its support to the officers and friends of the Navy. The members of the Board of Control cordially invite the co-operation and aid of their brother officers and others interested in the Navy, in furtherance of the aims of the Institute, by the contribution of papers and communications upon subjects of interest to the naval profession, as well as by personal support and influence.

On the subject of membership the Constitution reads as follows:

ARTICLE VII

Sec. 1. The Institute shall consist of regular, life, honorary, and associate members.

Sec. 2. Officers of the Navy, Marine Corps, and all civil officers attached to the Naval Service, shall be entitled to become regular or life members, without ballot, on payment of dues or fees to the Secretary and Treasurer. Members who resign from the Navy subsequent to joining the Institute will be regarded as belonging to the class described in this Section.

Sec. 3. The Prize Essayist of each year shall be a life member without payment of fee.

Sec. 4. Honorary members shall be selected from distinguished Naval and Military Officers, and from eminent men of learning in civil life. The Secretary of the Navy shall be, *ex officio*, an honorary member. Their number shall not exceed thirty (30). Nominations for honorary members must be favorably reported by the Board of Control, and a vote equal to one-half the number of regular and life members, given by proxy or presence, shall be cast, a majority electing.

Sec. 5. Associate members shall be elected from Officers of the Army, Revenue Cutter Service, foreign officers of the Naval and Military professions, and from persons in civil life who may be interested in the purposes of the Institute.

Sec. 6. Those entitled to become associate members may be elected life members, provided that the number not officially connected with the Navy and Marine Corps shall not at any time exceed one hundred (100).

Sec. 7. Associate members and life members, other than those entitled to regular membership, shall be elected as follows: "Nominations shall be made in writing to the Secretary and Treasurer, with the name of the member making them, and such nominations shall be submitted to the Board of Control, and, if their report be favorable, the Secretary and Treasurer shall make known the result at the next meeting of the Institute, and a vote shall then be taken, a majority of votes cast by members present electing."

Sec. 8. The annual dues for regular and associate members shall be two dollars, all of which shall be for a year's subscription to the UNITED STATES NAVAL INSTITUTE PROCEEDINGS, payable upon joining the Institute, and upon the first day of each succeeding January. The fee for life membership shall be thirty dollars, but if any regular or associate member has paid his dues for the year in which he wishes to be transferred to life membership, or has paid his dues for any future year or years, the amount so paid shall be deducted from the fee for life membership.

ARTICLE X

Sec. 2. One copy of the PROCEEDINGS, when published, shall be furnished to each regular and associate member (in return for dues paid), to each life member (in return for life membership fee paid), to honorary members, to each corresponding society of the Institute, and to such libraries and periodicals as may be determined upon by the Board of Control.

The PROCEEDINGS are published monthly, and anyone may subscribe for them. The annual subscription is $3.00; single copies, 50 cents for the bi-monthly and quarterly, and 30 cents for the monthly PROCEEDINGS. Annual dues for members and associate members, $2.00. Fee for life membership, $30.00.

All letters should be addressed U. S. Naval Institute, Annapolis, Md., and all checks, drafts, and money orders should be made payable to the same.

SPECIAL NOTICE

NAVAL INSTITUTE PRIZE ESSAY, 1918

A prize of two hundred dollars, with a gold medal, and a life-membership (unless the author is already a life member) in the Institute, is offered by the Naval Institute for the best essay presented on any subject pertaining to the naval profession.

On the opposite page are given suggested topics. Essays are not limited to these topics and no additional weight will be given an essay in awarding the prize because it is written on one of these suggested topics over one written on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. The award for the prize will be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay in a sealed envelope to the Secretary and Treasurer on or before January 1, 1918. The name of the writer shall not be given in this envelope, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary and Treasurer, with the motto on the outside and writer's name and motto inside. This envelope is not to be opened until after the decision of the Board.

3. The successful essay to be published in the PROCEEDINGS of the Institute; and the essays of other competitors, receiving honorable mention, to be published also, at the discretion of the Board of Control; and no change shall be made in the text of any competitive essay, published in the PROCEEDINGS of the Institute, after it leaves the hands of the Board.

4. If, in the opinion of the Board of Control, the best essay presented is not of sufficient merit to be awarded the prize, it may receive "Honorable Mention" or such other distinction as the Board may decide.

5. In case one or more essays receive "Honorable Mention," the writers thereof will receive a minimum prize of seventy-five dollars and a life-membership (unless the author is already a life member) in the Institute, the actual amounts of the awards to be decided by the Board of Control in each case.

6. An essay not having received honorable mention may be published also, at the discretion of the Board of Control, but only with the consent of the author.

7. The essay is limited to fifty (50) printed pages in the PROCEEDINGS of the Institute.

8. It is requested that all essays be submitted typewritten and in duplicate, if practicable; essays submitted written in longhand and in single copy will, however, receive equal consideration.

9. In the event of the prize being awarded to the winner of a previous year, a gold clasp, suitably engraved, will be given in lieu of the gold medal.

By direction of the Board of Control.

J. W. GREENSLADE,
Lieut. Commander, U. S. N., Secretary and Treasurer

PRIZE ESSAY TOPICS

SUGGESTED AT THE INVITATION OF THE BOARD OF CONTROL

BY

THE PRESIDENT OF THE NAVAL INSTITUTE, THE SUPERINTENDENT OF THE NAVAL ACADEMY, THE PRESIDENT OF THE NAVAL WAR COLLEGE, AND THE COMMANDERS-IN-CHIEF OF THE ATLANTIC, PACIFIC AND ASIATIC FLEETS.

"The Mutual Relations of Gunnery and Tactics."

"The Place of the Naval Officer in International Affairs."

"The Evolution of Naval Doctrine from National Character."

"The Training of Enlisted Personnel to Produce Modern Man-o'-Warsmen: (a) Military Training; (b) Moral Training; (c) Education."

"The Organization, Employment and Training of Reserve Fleets and Flotillas."

"A Personnel Reserve for the Naval Service."

"Value of Speed as an Offensive Element in Battleship Strategy and Tactics, as Compared with Armor."

NOTICE TO MEMBERS

More members, both regular and associate, are much desired. Any increase in membership invariably means larger number of papers and essays submitted, and consequently an improvement in the PROCEEDINGS.

You are requested to send or give the attached slip to some one eligible for membership, urging him to join.

By direction of the Board of Control,

J. W. GREENSLADE,
Secretary-Treasurer.

CONSTITUTION, Art. VII, Sec. 8.—"The annual dues for regular and associate members shall be two dollars, payable upon joining the Institute and upon the **FIRST DAY OF EACH SUCCEEDING JANUARY.** The fee for life membership shall be thirty dollars." There is no initiation fee.

.....*191*

To the Secretary and Treasurer,
U. S. Naval Institute,
Annapolis, Md.

Dear Sir:

Please enroll my name as a { *regular* / *associate* } *member of the U. S. Naval Institute from this date.*

Very truly yours,

.....

.....

U. S. NAVAL INSTITUTE
PROCEEDINGS
Number 168